VOLUME 23 SEPTEMBER, 1959 NUMBER 3

A Two-Year Program of Tests for Clairvoyance and Precognition with a Class of Public School Pupils.....*Margaret Anderson and Elsie Gregory* 149

Parapsychology and Human Nature.....*H. H. Price* 178

Two Repetitions of the Anderson-White Investigation of Teacher-Pupil Attitudes and Clairvoyance Test Results

Part I. High-School Tests.....*Arnon Deguisne* 196

Part II. Grade-School Tests.....*Gerald Goldstone* 208

Part III. Comment on the Deguisne and Goldstone Studies.....*James C. Crumbaugh* 214

Book Reviews

The Problems of Perception by R. J. Hirst....*H. H. Price* 215

Parapsychological Abstracts..... 219

Glossary 224

ENTIFIC QUARTERLY DEALING WITH EXTRASENSORY PERCEPTION, THE PSYCHOKINETIC EFFECT, AND RELATED TOPICS

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The Journal *of*
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VOLUME 23 SEPTEMBER, 1959 NUMBER 3

A TWO-YEAR PROGRAM OF TESTS FOR CLAIRVOYANCE AND PRECOGNITION WITH A CLASS OF PUBLIC SCHOOL PUPILS

By MARGARET ANDERSON AND ELSIE GREGORY[1]

ABSTRACT: The main purpose in the ESP research reported here was to see if a group of elementary school pupils could be so motivated that their ESP success would be sustained over a long period of time—in this case, over two school years. At the start of the investigation, the subjects were the members of a fifth-grade class, chosen because of their success in a former ESP test of shorter duration and because of the exceptionally good rapport which the teacher appeared to have with her class.

The experiment conducted throughout the first year was devoted to tests of clairvoyance. The teacher conducted the tests. Each subject was given a sealed envelope with an ESP record sheet stapled to the outside. He was asked to write on it the ESP symbols which he thought would match a list of symbols sealed inside the envelope. Special care was taken to provide the essential motivation for the subjects in a variety of ways. The total results of the clairvoyance experiment were suggestively positive.

The experiment conducted during the second year was devoted to precognition tests, carried out according to the same general procedure, with the same class and the same teacher when the subjects were in the sixth grade. The total results of this part of the work were positive to a significant degree. The main evaluation, however, was one which took account of the variations in scoring from session to session, and this yielded highly significant results. This additional evidence for precognition obtained under rigorous experimental conditions is offered as the most important outcome of the research.

The rise in scoring was not a steady one throughout the two sections of the investigation since the peak of scoring came in the first half of the second year. However, the results do show that a group of subjects can be successfully tested over a long period of time.—Ed.

[1] While the first author listed was primarily responsible for the planning of the experiment, the analysis and interpretation of the results, and the writing of the report, credit is due to the second author for her indispensable part in the experiment as the classroom teacher-experimenter.

We wish to thank the following students for their enthusiastic co-operation as subjects in these experiments: Mark Anderson, Mary Lee Babb, Judith Bacon, David Benware, Barbara Bliemberg, Chris Brewster, David Brumfield, Brian Bulat, Barbara Campbell, Ricky Carlson, Karen Cleaver, Darlene Duncan, Joan Goddard, Barbara Hansen, Ricky Kupferschmidt, Patricia Lehner, Lary McIntyre,

General Introduction

THE MAIN FINDING that has emerged from a series of classroom experiments reported from the Duke Parapsychology Laboratory (**1**, **2**, **3**, **4**, **5**, **6**, **7**) has been the tendency for ESP scoring to be associated with the attitudes of student and teacher toward each other. The highest rate of ESP success has been achieved by those students who liked the teacher (who acted as experimenter in the classroom test) and whom the teacher liked in return. On the other hand, the students for whom mutually unfavorable pupil-teacher attitudes were recorded tended to score about as far *below* mean chance expectation in their ESP tests as those with mutually favorable attitudes went *above*. In the main, these experiments followed a procedure which involved testing the students of each class for one session only, just as other group tests for ESP have been limited to a few runs from each subject within a short interval of time.

Among the studies of ESP and attitudes there was an experiment which I reported in 1957, an investigation carried out with two fifth- and two sixth-grade classes in Wheaton, Illinois (**1**). One of the fifth-grade classes was outstanding because of the large number of students who obtained positive ESP scores, and it was observed that in this instance the mutual student-teacher attitudes were consistently positive. It occurred to me that further work with this teacher might provide an opportunity to find out whether ESP tests would be successful over a long period of time when there was good reason to expect that positive personal attitudes would predominate. If a teacher could cultivate an atmosphere of student interest in the regular grade material to be covered over the ten months of the school year, might it not be possible for her to sustain the interest in a psi test over a similar length of time? Inquiry concerning this teacher, Mrs. Elsie Gregory, revealed that she was considered an ex-

Deidre Mignin, Carla Miller, James Miller, Steven Montgomery, Maury Robert, Steven Ruoff, Sandy Sanborn, Diana Sinclair, Stephanie Stream, Diana Swenson, Loretta Taylor, Mary Warren, David Welch, Kathy Weissenborn, Paul Winkler, Al Bonde, Craig Lutz, Jerry Jones, Steve Sandkam, and Wesley Wiggins. We wish further to acknowledge our thanks to Mrs. Mary Davies, Principal, Hawthorne Elementary School, Wheaton, Illinois, and to Miss Rhea White, Mrs. Frances Greene, Mrs. Peggy Murphy, and Mrs. Sarah Bilberry for their valuable assistance in the tabulation of the data.

The work of one of the authors, M.A., was supported in part by a Ralph Drake Perry Fellowship. This paper was presented at the second annual convention of the Parapsychological Association in New York City, Sept. 10-12, 1959.

cellent teacher, that she enjoyed the children, that her classes over the years had all enthusiastically responded to her, and that she was interested in parapsychology. When I approached her with the idea of an extended series of ESP tests with her students, she agreed to join me in this investigation. She gave generously of her time, and her unflagging and enthusiastic interest over a period of two years made this experiment and its successful outcome possible.

The experiment was planned and carried through in two stages, each one covering a school year. Mrs. Gregory taught the fifth grade, and in addition she had classes in music appreciation for other grades, including the sixth. The work for the year 1957-58 was planned as a clairvoyance experiment to be repeated twice each month through the regular school year with her fifth-grade pupils as subjects. The second year's work grew out of the first one when the same pupils asked Mrs. Gregory in their sixth-grade music class at the beginning of the term if they could not continue their ESP tests. This opportunity was seized by the experimenters, and the experiment for the second year was planned as an extended test of precognition. This shift was made as a means of adding novelty and challenge to the project for the children and because of the promising prospects of gathering further evidence on precognition, the most puzzling of all psi phenomena. Because of the manner in which the experiment developed in these two distinct stages over the two-year period, the work of each period will be presented and discussed separately, and the report will be concluded with a general discussion of the work as a whole.

Other recent studies have also raised the question of whether ESP success can be sustained or improved in working with the same group of subjects over a period of time, but the question was not examined as thoroughly as in the present investigation. In one such study, Anderson and White (**6**) had the teacher test the same class at the beginning and at the end of a school semester. While they were particularly interested in observing changes in the scoring of individual subjects in relation to changes in attitude toward the teacher during the semester, the work is of more interest in the present connection because of the trend shown in the total score. At the beginning of the semester, the class had an insig-

nificant deviation of − 18 on 145 runs, while the test at the end of the semester gave a deviation of + 51 on the same number of trials. While the results of the second test ($P = .03$) did not reach the .01 level of significance, they at least offered encouragement for continued testing with the same group of subjects. A second study bearing upon the same point is the experiment with first-grade pupils reported by the Vasses (13). Mrs. Vasse, acting in the dual capacity of teacher and experimenter, carried out clairvoyance tests with some of her pupils in the fall of the year with only chance results and in the spring of the following year with highly significant results. While the study was not rigorously controlled for isolating the factors responsible for this difference, the experimenters thought that the closer relationship which developed between teacher and pupils over the school year might have been responsible for the high ESP scores. They reported that a strong group spirit developed. Apparently the children's increasing familiarity with the "game" did not hamper their ESP success.

The present study goes further than those mentioned in the respect that the tests were carried out on a more regular schedule and over a longer period of time. It also involved explicit efforts to develop and maintain the interest that was considered essential for the operation of psi. In fact, the objective of demonstrating ESP over an extended interval of time with a group of unselected subjects (that is, not selected individually for psi abilities) was considered to be the main aim of the present research. We were willing, therefore, to do those things which we felt might contribute toward the achievement of this one objective and, assuming that this effort was successful, to leave to further research the task of finding out how the different aspects of the procedure contributed to the outcome.

It seems appropriate to describe in general terms at this point the different means used in the effort to provide the best possible psychological conditions and to give the details about each of these at relevant points later in the report. (1) The teacher, as already described, was selected for this experiment because she is generally well liked by her pupils. (2) Both experimenters shared an interest in parapsychology and in this investigation especially. (3) M.A.

wrote to E.G. frequently and with the idea in mind that the letters might be shared with the students; and E.G. wrote frequently in return, many times at the request of the students to express their feelings and wishes concerning the experiment. (4) The undertaking was not presented to the pupils as an experiment; rather, it was presented as a project which was closely tied in with their age and stage in school. They were led to develop the project within a framework of purposeful fantasy which challenged them to do their best, trying to exceed in each session what they had achieved up to that point. (5) At the request of the children themselves, the program was kept as a special "secret" of the group, something that was reserved for them alone. Thus they could feel especially favored and proud. (6) From the outset, the effort was made to sustain interest by varying each month the form of the record sheet on which the targets were recorded and on which the children wrote their responses. These changes were relatively simple during the first part of the first year, but toward the end of the clairvoyance tests the record forms were varied more widely at the suggestion of the students themselves. During the whole of the second year I exerted every effort to make each month's record form distinctive, appropriate for the month involved, and as challenging as possible in relation to the music theme around which the work of the second year was woven. The part played by each of these separate aspects of the procedure in the development of the experiment as a whole will, I trust, become clearer as the report continues.

Clairvoyance Testing in the Fifth Grade

Introduction

In September of 1957, I met with Mrs. Davies (Principal of the Hawthorne Elementary School in Wheaton, Illinois) and Mrs. Gregory for the purpose of discussing a proposed clairvoyance experiment. Mrs. Davies and Mrs. Gregory enthusiastically endorsed the plan, and the experiment was carried out over the seven-month period of October, 1957, through April of 1958 with Mrs. Gregory's 32 fifth-grade pupils.

It was agreed that the success of this study might well depend on how effectively ESP could be introduced to the pupils as a "natural"

occurrence. Mrs. Gregory, late in September of 1957, discussed the year's testing program with her class. ESP was presented without dramatic emphasis or glamour. The pupils were shown the five ESP symbols and were told that ESP was an ability people possess in much the same way that they have the ability to read or to write. The pupils seemingly accepted this as plausible. Mrs. Gregory suggested that, just as people have to practice to improve any faculty, so would they have to practice their ESP repeatedly in order to improve this ability. She asked the pupils to decide on whether or not they wanted to include ESP in their program for the year. The vote was unanimously and enthusiastically affirmative.

There was no mention of rewards of any kind. For motivational purposes, other than those means generally used by an effective teacher to elicit good results in a classroom, the pupils were told that they were the only fifth-grade class in the world who would be doing this project, and that no other fifth-grade class had ever done it before. They were also told that they would know after each "practice" (a session) how well they were doing. Mrs. Gregory was to do everything to fit the test into the classroom situation and to implant the idea that since they had chosen to do this she *expected* them to do very well.

The children decided to appoint a room chairman who would report their progress, and, at the outset, they decided that this program would be a secret among Mrs. Davies, Mrs. Gregory, themselves, and me. No one else in the world would know until the end of the school year. Thus, a group spirit and enthusiasm initiated the experiment.

Procedure

The pupils were to do one session, consisting of two runs, twice a month for a total of four runs per month. Mrs. Gregory was to give the test when she felt the class was psychologically ready for it. In actual fact, she gave it approximately once every two weeks.

In an effort to introduce an element of novelty into the testing program, I designed and mimeographed seven variations of the standard ESP record sheet, a different one to be used each month. Despite the variations, each record sheet always contained spaces for four runs, each with 25 numbered blanks where the pupils were

to make their calls or trials. Each record sheet was divided into halves, each half of the sheet containing an appropriate place for the student's name, the date, the number of the sheet, and the two runs of 25 trials per run. The subjects were to use half of the sheet on the first monthly session and the remaining half at the second session, approximately two weeks later.

For the first month (October) the record sheet contained four standard, but separated, vertical ESP columns. For November, the sheet contained four separate standard ESP columns arranged horizontally across the page. December's record sheet was made up of four groups of five horizontally connected ESP columns cut to five trials per column rather than the usual 25. For the January session, there were 20 separated columns of five trials per column arranged alternately high and low (zigzag) across the page. February's record sheet contained four circles for each run, each circle containing two inner circles, around which were 25 numbered spaces. During the month of February the class wrote and asked if they might have stars for their March record sheets. In compliance with this request, four stars constituted the pupils' record sheets for that month. When sending the March sheets, I wrote the pupils that if they "got to the stars" I would have a real surprise for them in April. With Sputniks and ICBM's filling the news and the children's thoughts at that time, I designed a rocket ship (called the W-5 for Wheaton Fifth) for the April target. As always, the record sheet contained four runs, each containing 25 numbered blank spaces for the subjects' calls.

At the first session of the month, each subject received from the teacher a sealed, numbered manila envelope containing the appropriate monthly target sheet, which, regardless of design, had a total of four runs of randomized recorded ESP symbols, 25 trials constituting a run.[2] A different target order was used for each run; the target sheets, record sheets, and envelope which belonged together were numbered for identification; and two copies of each target sheet were kept on file at the Parapsychology Laboratory. Each original target sheet had two sheets of opaque paper on top of it and one

[2] The target sheets had been made up at the Parapsychology Laboratory by Mrs. Betsy Moser on the basis of *Tables of Random Sampling Numbers* by M. G. Kendall and B. Babington Smith, 1954.

underneath, and these four sheets were enclosed in a manila envelope, then sealed. Three blank ESP record sheets for the subject's calls were stapled at the two top corners to the outside of the envelope, thus serving as an additional means of sealing the envelope. There were pieces of carbon paper between the three outside sheets so that a carbon copy of each subject's ESP calls for each session could be obtained. The carbon copies were used for independent checking.

At the time of the test, each student was asked to write his name and the date and then to write on the topmost outer record sheet the symbols which he thought were written on the target sheet enclosed in the envelope. The students were allowed to make their calls in their own way and at their own rate of speed.

At the end of the first session each month, the student envelopes were collected by Mrs. Gregory. She removed the bottom or third outside record sheets, which were carbon copies of the students' calls on the first two runs on the topmost or original record sheets, and sent them to me at the Parapsychology Laboratory for checking. She then put the students' envelopes in a locked drawer, removing them only when the second monthly session was to be held.

When the first session material was returned to the Laboratory, the name which each student had written on the record sheet was written on the two carbon copies of the target sheets which were on file in the Laboratory. First, independently, Rhea White checked the subjects' calls against her carbon copy of the targets, and then I, also independently, checked the calls against my carbon copy of the targets. The scores were placed on two separate master sheets and were then checked for agreement. In this way, independent tabulations were made on each checker's master sheet for each student. In addition, a third and final check was made later (see below) by Mrs. Betsy Moser of the Parapsychology Laboratory. The student scores were then sent to Mrs. Gregory, who informed the class of their results. The carbon copies of the targets were then filed again.

When the students finished their second monthly session, Mrs. Gregory returned all of the manila envelopes to the Laboratory. R.W. and M.A. then together opened the sealed manila envelopes, recording the student's name from the outside record sheet on the target sheet removed from the envelope. R.W. checked independ-

ently the original record sheet against a carbon of the target, while M.A. independently checked the carbon record sheet against the original target sheet. Scores were independently recorded, placed on the two independent master sheets and then checked for agreement. The student scores were then sent to Mrs. Gregory along with 32 new sealed envelopes which were to be used in the next month's testing. Mrs. Moser rechecked all of the data at the end of each month. The entire experiment was later rechecked by Mrs. Sarah Bilberry in gathering data on the vertical distribution of hits.

Results

Thirty-two subjects completed a total of 872 runs or 21,800 calls in the course of two monthly clairvoyance sessions of two runs per session over a seven-month period. Some of the subjects were not present at every session, which accounts for the 872 runs where one would expect 896. In accordance with the experimental design, the results were statistically evaluated by the critical ratio method applied to direct hits. The total number of hits was 4479, which is 119 above

Table 1

TOTAL ESP RESULTS BY SESSIONS

Month	Session	Number of Runs	Score	Dev.	Av. Run Score	CR	P
October	1	54	275	+ 5	5.09		
	2	60	328	+ 28	5.47		
November	3	64	354	+ 34	5.53		
	4	64	332	+ 12	5.19		
December	5	64	294	− 26	4.59		
	6	64	329	+ 9	5.14		
January	7	64	332	+ 12	5.19		
	8	64	330	+ 10	5.16		
February	9	62	305	− 5	4.92		
	10	62	303	− 7	4.89		
March	11	64	315	− 5	4.92		
	12	64	350	+ 30	5.47		
April	13	62	321	+ 11	5.18		
	14	60	311	+ 11	5.18		
Total		872	4479	+119	5.14	2.02	.04

mean chance expectancy (M.C.E.). This yields a CR of 2.02, which gives a suggestively significant probability of .04 (see Table 1).

In view of the number of instances in which declines have been observed over a series of ESP trials, it seemed interesting to examine the present data for such effects. There was no indication of a decline effect between the two runs per session. The deviation for the first run of all sessions was + 54 on 436 runs as compared to + 65 on 436 runs for the second run of the sessions (see Table 2).

Table 2

A Comparison of Results for the First and Second Run of the Session

First Run of Session				Second Run of Session			
No. of Runs	Score	Dev.	Av. Run Score	No. of Runs	Score	Dev.	Av. Run Score
436	2234	+54	5.12	436	2245	+65	5.15

There is evidence of a slight though not significant decline between the first seven sessions, which gave a deviation of + 74 on 434 runs, and the last seven sessions, which gave a deviation of + 45 on 438 runs (see Table 3). However, it should be mentioned that Session 12 yielded the second largest deviation in the experiment and that the deviations of the last two sessions were positive, not dropping to chance or below as is frequently encountered in ESP data.

Table 3

A Comparison of Results for the First Seven Sessions and Last Seven Sessions

First Seven Sessions				Last Seven Sessions			
No. of Runs	Score	Dev.	Av. Run Score	No. of Runs	Score	Dev.	Av. Run Score
434	2244	+74	5.17	438	2235	+45	5.10

Comparing the results of the first session of the month with the last session of the month reveals a deviation of + 26 on the

sessions completed the first of the month and a + 93 on the sessions completed two weeks later (see Table 4). This, of course, shows a decided (although statistically insignificant) incline rather than a decline effect.

Table 4

A Comparison of Results for the First and Last Sessions of the Month

First Monthly Session				Second Monthly Session			
No. of Runs	Score	Dev.	Av. Run Score	No. of Runs	Score	Dev.	Av. Run Score
434	2196	+26	5.06	438	2283	+93	5.21

While the comparisons presented in Tables 2, 3, and 4 suggest that there was little or no decline in scoring in the experiment, the vertical distribution of hits according to the five segments of the run

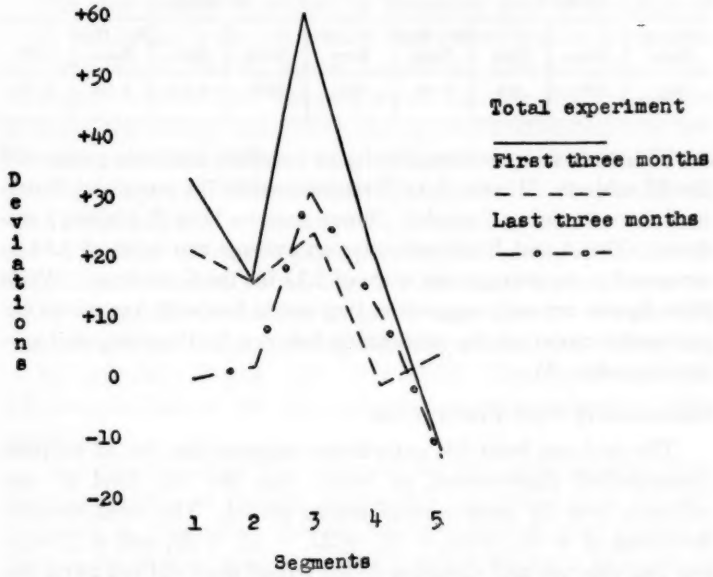

Fig. 1. Distribution of hits among the five segments of the run in the first-year clairvoyance tests.

(+ 33, + 17, + 60, + 21, and − 12) shows a high peak on the middle segment but with a general, though insignificant, over-all decline. (See Figure 1.) The decline tendency is present in the data of both the first three and the last three months.

Of the 32 pupils involved in the experiment, 16 were boys and 16 were girls. The boys gave a deviation of + 6 on 440 runs; the girls gave a deviation of + 113 on 432 runs (CR = 2.72; P = .007). (See Table 5.) The CR of the *difference* is 1.84, and is therefore only suggestive (P = .07). This is contrary to van Busschbach's findings in his fifth- and sixth-grade GESP tests in which the fifth-grade boys scored somewhat higher than the girls (12). However, since in that study each subject only made 30 guesses, a close comparison cannot be made.

Table 5

A Comparison of Results for Boys and Girls

16 Boys				16 Girls				
No. of Runs	Score	Dev.	Av. Run Score	No. of Runs	Score	Dev.	Av. Run Score	CR
440	2206	+6	5.01	432	2273	+113	5.26	2.72

This class was considered to be an excellent academic group. Of the 32 subjects, 21 were A or B students while the remaining 9 subjects were receiving C grades. There were no D or E (failing) students. The A and B subjects gave an average run score of 5.34 as compared to an average run score of 5.11 for the C students. While these figures are only suggestive, they are in line with a previous experimental report on the relationship between ESP scoring and academic grades (2).

Discussion of First Year's Work

The evidence from this experiment suggests that the 32 subjects demonstrated clairvoyance, at better than the 5% level of significance, over the seven months' testing period. The seven monthly deviations of + 33, + 46, − 15, + 22, − 12, + 25, and + 22 suggest that the type and variation of the record sheet did not affect the level of ESP scoring. (In this investigation the manner in which

the targets were arranged on the page is assumed to be an important aspect of the "target material.") Furthermore, there was no relationship, such as that observed by Pratt and Woodruff (10), between the level of scoring and "newness" of the target material. The scoring was higher, though not significantly so, not only on the second run of the session but also on the second session of the month as shown in Tables 2 and 4. Extended use of the written form of the ESP symbols as target material was not accompanied by a decline in the scoring.

The experiment began with a positive deviation which increased through the three sessions completed during the first month and a half. This fact, together with the trends shown in the rest of the experiment, suggests that the group motivation, which was high at the beginning of the experiment, may have reached a peak, then receded, and become stronger once more toward the end of the experiment. These are only suggestions, however, since the fluctuations in scoring level are not statistically significant.

The first session completed in December gave a deviation of -26. Since this is the only session which contributed a large negative deviation, it calls for special discussion. Following the second November session, Mrs. Gregory wrote that the children wanted to have a soft musical background during their next session (the first December session). While I was fully aware that this had not been planned as a part of the experimental design, the fact that the request came from the children prompted me to agree to the plan. It cannot be said that the music playing in the background disturbed the subjects and accounts for the negative deviation, but it is an interesting possibility to consider in future experiments. On the 808 runs of the experiment, excluding this one session, the deviation was $+145$ and the CR was 2.55 ($P = .011$). The pupils wrote me following this session that they did not want any more musical backgrounds!

The rate of scoring was higher on the first seven sessions of the experiment than on the last, despite this one rather large negative deviation in December. During February and the first session of March the scoring was just slightly below chance. It might be pointed out that following the Christmas holidays there is usually a

great deal of academic motivation centered around the end of the first school term. The period between the beginning of the second term and the Easter holiday is considered by some teachers and students to be "the long pull" of the school year. That this may have been the case in this situation and that it was reflected in the testing program is at least a possibility. It does caution one, however, to be alert to this period of the school year in future tests of this type.

The suggested difference between boys and girls, as shown in their total results (Table 5), does not appear so striking in terms of the general level of individual subjects' scores. Of the 16 boys who participated in the experiment, only five had a total negative deviation for the entire testing program, one had a chance score, and 10 gave positive deviations. Of the 16 girls, five had total scores that were below M.C.E. and 11 had positive deviations. Thus there were 21 above-chance subjects and 10 below-chance, which indicates a striking degree of consistency of scoring among the subjects ($\chi^2 = 3.9$, 1 d.f.; $P = .05$).

Precognition Testing in the Sixth Grade

Introduction

Mrs. Gregory's 32 fifth-grade pupils who had taken part in the clairvoyance experiment were promoted to the sixth grade at the end of the 1957-58 school year. Of these 32 children, 27 plus five new ones were to meet with Mrs. Gregory for a music appreciation hour four days a week during the 1958-59 school year. Late in September, Mrs. Gregory wrote that the pupils had asked if they might continue "their secret," the testing program, during the year and that she was interested herself in doing further testing with the group. Naturally I was eager to continue. This seemed a good opportunity to discover whether the scoring level could be maintained or perhaps even be improved in a change-over from the tests of clairvoyance used in the first experiment to some other type of test in this second experiment. Following an exchange of ideas and suggestions, the precognition study reported here was designed and carried out over the six-month period of November, 1958, through April, 1959.

As a result of the previous year's testing program, Mrs. Gregory indicated that the children seemingly accepted the existence of psi

ability quite casually and without making an issue of it. The introduction of precognition was accepted by them in the same unquestioning way.

Since the tests were to be carried out during the subjects' music appreciation class, the experiment was designed around a musical theme to introduce a new and different testing situation from the preceding year's program. Also, I felt that such a design would provoke the children's imagination and take their minds off the illogicality or irrationality of precognition.

At the beginning of October I wrote the group, discussing radio telescopes, beams bouncing off the moon, and recordings made of sounds in space. I reminded them that they had "rocketed into space" and had "reached the stars" the preceding year. Did they suppose that this year they might be able to do something new? Could they capture and relay the music in space back to Mrs. Gregory and me? They confidently replied that they could and would!

The pupils enthusiastically responded to the suggestion that they be called the Orchestra of Tomorrow, and that they would be tuning in on the music of outer space. If the group wanted to "tune up" before their musical space flight, they would sing a song they liked, or listen to a favorite record. Mrs. Gregory, "conducting" from the podium, would then distribute the "music" (record sheets) designated for use at the particular session, call for attention, and direct them to begin. They were to proceed at their own pace.

The subjects were of course familiar with the five standard ESP symbols, and they were told that these would be used as a code. During "rehearsals" no one except each of them individually would know the meaning of the music represented by the code he recorded on his music sheet. They would be creating their music on CSST (Central Standard Space Time). After they completed the rehearsal, Mrs. Gregory would send me their coded music, and, by using a future "earth-time code" (table of random numbers to determine precognition targets) on EST (Eastern Standard Time), I would be able to intercept and score the music, reporting to them in turn how it was "coming through" to me. The pupils, imaginative and excited, endorsed the experimental plan.

As during the previous year, no mention was made of rewards, monetary or otherwise. Mrs. Gregory reported that the challenge of being able to fulfill their committed assignment proved to be "jet-propelled" motivation. However, the subjects were told that if the rehearsals went well, they might give a "concert" in the spring.

Procedure

Following the plan of the preceding year, the subjects were to do one session, consisting of two runs, twice a month for a total of four runs per month. Mrs. Gregory was to give the test when she felt the class would be best prepared for it, though, as before, she gave it approximately every two weeks.

In a continued attempt to ascertain if the manner of presentation of the stimulus material affected the rate of ESP scoring and to continue the element of novelty in the precognition testing program, I designed and mimeographed five new variations of the standard ESP record sheet. One of the varied record sheets used in the clairvoyance testing program was reused, making the sixth type of record sheet for the precognition study.

A different record sheet was used each month. Despite the variations, each record sheet always contained four runs, each of which contained 25 numbered blanks where the youngsters were to make their calls or trials. Each record sheet consisted of two parts, each half of the sheet containing an appropriate place for the student's name, the date, the number of the sheet, and the two runs of 25 trials per run. One half of the sheet was to be used for the first monthly session and the remaining half for the second session, approximately two weeks later.

For the first month, November, the record sheet consisted of four large notes of music. In December, it contained four bells, and in January four circles, representing planets. (The "circle" record sheet had been used in February for the clairvoyance experiment.) Around the musical theme of "You've Got to Have Heart" and the question, "Do they have valentine music in space?" the February record sheets contained four hearts. In line with the "good luck" theme the design of the March record sheet consisted of four shamrocks crayoned green. The April record sheet consisted of four musical clefs. Each month, regardless of the variation of the stand-

ard ESP run, the record sheet contained the equivalent of four runs, each containing 25 numbered blank spaces for the subject's calls.

At the first session of the month, each student received three stapled record sheets of the designated type for the particular month. Each student test was assigned a different number. Two pieces of carbon paper were used to separate the three record sheets so that a carbon copy of each subject's calls at each session could be obtained. The carbon copies were used for independent checking.

At the beginning of the test, each student was asked to write his name and the date, and then to write on the topmost outer record sheet the symbol code as he "heard" it and as he wished to relay it.

When the first session of each month was completed, Mrs. Gregory removed the third or bottom record sheet, which was a carbon copy of the student calls on the first two runs of the topmost or original record sheet, and sent them to me at the Parapsychology Laboratory for checking. She then put the student tests away in a secret place, removing them only when the second session of the month was to be completed.

When the material for the first session of each month was returned to the Laboratory, the standard prescribed procedure used in getting precognition targets as described by Mangan (8) was followed. The method involves throwing ten-sided dice to get four three-digit numbers, then carrying through a complicated calculation by machine to find the exact place to start reading the random number table. I threw the dice in the presence of Miss Rhea White who, in turn, carried through the calculation leading to an entry in the random number table. On 32 separate, numbered record sheets, she then recorded in duplicate the randomized target order for two runs on each record sheet, beginning with record sheet number 1 and proceeding through sheet number 32. Taking the numbered record sheet containing the subject's carbon calls of the first test session and matching it with the corresponding numbered *carbon* copy of the randomized target order, she checked the subject's results. Then I, using the *original* copy of the numbered randomized targets, independently rechecked the data. In this way, tabulations were made and counterchecked for each student. The individual scores were then sent to Mrs. Gregory, along with the word that the "music

was coming through clearly." When the students finished their second monthly session, the two completed record sheets (the original and one carbon) containing the four runs for the month were returned to the Laboratory. The same procedure as described was followed in checking the data, except that one experimenter checked against one set of calls and the other against the other. In addition, checking against the original record sheet, Miss White and I independently rechecked the first session. The second session scores were then sent to Mrs. Gregory, along with the tests for the following month.

The same procedure for checking the data was used throughout the experiment. When Miss White left the Laboratory in December, Mrs. Peggy Murphy in my presence threw the ten-sided dice to determine the machine calculation, Mrs. Frances Greene of the Laboratory carried through the calculation determining the entry into the random number table, and Mrs. Sarah Bilberry translated the digits into the target order and assumed the responsibility as second experimenter, independently checking the data. The entire experiment was again rechecked by Mrs. Bilberry in assessing the vertical distribution of hits.

Results

The 32 subjects who took part in the precognition tests during the sixth-grade school year completed a total of 732 runs or 18,300 trials. Some of the subjects were not present at every session, which accounts for the 732 runs where one would expect 768.

In accordance with the experimental design set up at the beginning of the year, the results were evaluated for over-all significance in a way that took account of fluctuation in scoring from session to session. This was the chi-square method which involved combining the squared critical ratios of the 12 individual sessions. The chi-square was 40.29 (12 d.f.) which has a corresponding probability of .00007 (see Table 6). The total number of hits was 3808, which is 148 above what one would expect from chance. This gives a CR of 2.73 ($P = .006$).

There was little evidence of a decline effect anywhere in the data. The combined deviations for the first run of the sessions is + 82 on

Table 6

TOTAL ESP RESULTS BY SESSIONS

Month	Session	No. of Runs	Score	Av. Run Score	Dev.	CR	P	χ^2
November.....	1	62	345	5.56	+ 35	2.22	.026	4.93
	2	64	361	5.64	+ 41	2.56	.01	6.55
December.....	3	62	256	4.13	− 54	3.43	.0006	11.76
	4	60	300	5.00	0	....	.....	.....
January.....	5	60	346	5.77	+ 46	2.97	.003	8.82
	6	60	296	4.93	− 4	.26	.....	.07
February.....	7	64	350	5.47	+ 30	1.88	.....	3.53
	8	64	343	5.36	+ 23	1.44	.....	2.07
March.....	9	62	321	5.18	+ 11	.70	.....	.49
	10	54	262	4.85	− 8	.54	.....	.29
April.....	11	56	289	5.16	+ 9	.60	.....	.36
	12	64	339	5.30	+ 19	1.19	.....	1.42
Total.....		732	3808	5.20	+148	2.73	.006	*

*$\Sigma\chi^2$=40.29 (12 d.f.)
P= .00007

366 runs as compared with a deviation of + 66 on the 366 runs from the second run of the sessions (see Table 7).

Table 7

A COMPARISON OF RESULTS FOR THE FIRST AND SECOND RUN OF THE SESSION

First Run of Session				Second Run of Session			
No. of Runs	Score	Dev.	Av. Run Score	No. of Runs	Score	Dev.	Av. Run Score
366	1912	+82	5.22	366	1896	+66	5.18

In the first six sessions of the experiment, there was a total deviation of + 64 on 368 runs as compared with a deviation of + 84 on the 364 runs completed during the last six sessions (see Table 8). While these total results suggest an incline rather than a decline effect, a closer look at the session deviations reveals that four of the first six sessions yielded the most significant deviations, with

independently significant probabilities of .026, .01, .0006, and .003 (see Table 6). Most of the evidence for ESP thus occurred in the first three months of the experiment. The largest deviation, a significantly negative one, came from the first session in December. The only substantial negative deviation in the clairvoyance experiment of the preceding year, though it was not significant, occurred in the first session of December also.

Table 8

A Comparison of Results for the First Six Sessions and Last Six Sessions

First Six Sessions				Last Six Sessions			
No. of Runs	Score	Dev.	Av. Run Score	No. of Runs	Score	Dev.	Av. Run Score
368	1904	+64	5.17	364	1904	+84	5.23

A comparison of the results of the first session of the month with the last session of the month shows a deviation of +77 on 366 runs completed during the first sessions and a deviation of +71 on the 366 runs completed at the second monthly sessions (see Table 9), an obviously negligible difference.

Table 9

A Comparison of Results for the First and Last Sessions of the Month

First Monthly Session				Second Monthly Session			
No. of Runs	Score	Dev.	Av. Run Score	No. of Runs	Score	Dev.	Av. Run Score
366	1907	+77	5.21	366	1901	+71	5.19

The vertical distribution of hits according to the five segments of the run (+33, +46, −16, +21, and +64) gives a close approximation to a U-curve, thus failing to reveal a decline (see Figure 2).

Of the 32 subjects who participated in the experiment, 19 were boys and 13 were girls. On 438 runs the boys gave a deviation of +74, and the girls, on 294 runs, gave an identical deviation of

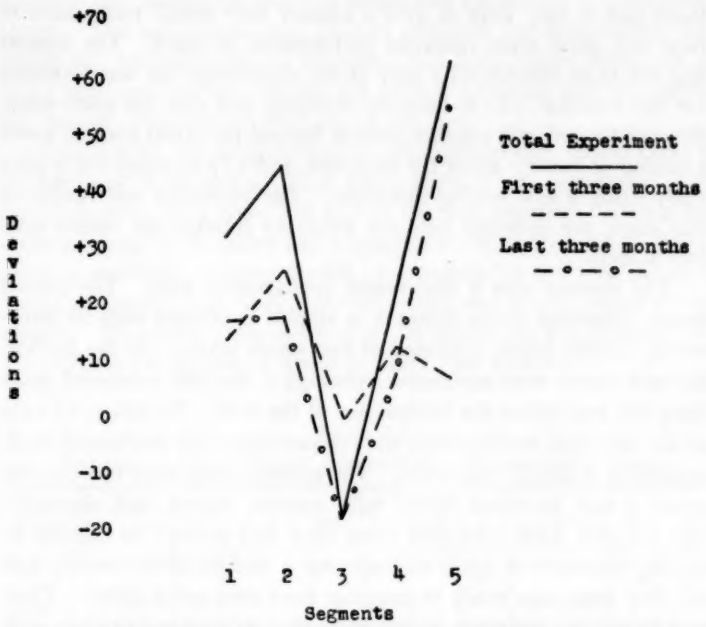

FIG. 2. Distribution of hits among the five segments of the run in the second-year precognition tests.

+74. Unlike the clairvoyance experiment, the scoring was fairly evenly distributed between the boys and the girls (see Table 10).

Table 10

A COMPARISON OF RESULTS FOR BOYS AND GIRLS

19 Boys				13 Girls			
No. of Runs	Score	Dev.	Av. Run Score	No. of Runs	Score	Dev.	Av. Run Score
438	2264	+74	5.17	294	1544	+74	5.25

An Experimental Postscript

Following the March session, I wrote the children that the music was not coming through quite as clearly as it had been and reminded

them that if they were to give a concert they would really have to turn in a good dress rehearsal performance in April. The concert was not to be considered a part of the experiment but was proposed for two reasons: (1) to keep the thinking, and thus the motivation, directed toward still another session beyond the April runs to avoid a feeling of finality about the program, and (2) to carry out a pilot study using a new testing technique. The procedure and results of this study are included here for whatever interest the reader may find in them.

The concert was a dual-target precognition task. The record sheets, presented to the subjects in stapled duplicates with an intervening carbon paper, consisted of two music staffs. At the far left, the staff spaces were numbered 1 through 5, the fifth numbered space being the area below the bottom line of the staff. To assure 25 calls on the staff-run, vertical lines were drawn across the horizontal staff, separating it into 25 call units. The symbols used were five musical notes: a half, modified dotted half, quarter, eighth, and sixteenth. The subjects were told that since they had proved so capable at hearing the music in space and relaying it back to Mrs. Gregory and me, they were now ready to compose their own space music. They were to use the five notes in any order they wished and to place each one they chose in any of the five spaces of the staff, putting one note in each of the 25 units. In order to dispel any questions as to why they could not put their notes on the horizontal lines of the music staff they were told that obviously space music would be written in "spaces," not on lines.

Mrs. Gregory reminded them that if they thought of an "earth" tune, it would probably conflict with space music. They would, therefore, want to keep themselves alert for the music they had been able to find and transpose throughout the year.

It had originally been planned that the subjects would complete the two runs at one session, but they indicated that they were enjoying the experience so much they wanted to wait until their next class to complete the second run, which they did.

It was decided prior to the concert test that when the random number table was entered, two runs of 25 calls for each subject would be recorded for each of the music-staff runs. The first ran-

domized run became the position target and the second run, the note target. The same procedure, already outlined, for determining the target was followed with the exception that Miss Janice Mellinger, a Duke graduate student, carried out the randomizing and completed the second, independent checking of the data.

On 62 runs, the subjects scored 326 position hits, which gives a deviation of + 16 and a CR of 1.02, which is not significant. On the same runs, there were 358 hits on the note selection. This gives a deviation of + 48, which has a significant CR of 3.05 (P = .002). With a probability of one double or complete hit per run, 90 such "note and space" hits were recorded where one would expect 62 by chance. This gives a deviation of + 28, which has a significant CR of 3.63, the probability of which is .0003 (see Table 11).

Table 11

RESULTS OF DUAL-TARGET PRECOGNITION EXPLORATORY STUDY

Session	No. of Subjects	Position Hits	Dev.	CR	P	Note Hits	Dev.	CR	P	Dual Hits	Dev.	CR	P
First.....	32	169	+ 9			179	+19			42	+10		
Second...	30	157	+ 7			179	+29			48	+18		
Total..	62	326	+16	1.02	.31	358	+48	3.05	.002	90	+28	3.63	.0003*

*If this evaluation had been based upon the Poisson distribution (as being more appropriate for trials having a 1/25 probability basis), the result would have been P = .0008.

The scoring was equally divided between the boys and the girls. One stellar performance was recorded by a girl during the first session. Where one would expect 5 hits by chance, she obtained 14 position hits, 10 of which were in sequence, and 6 note hits. Her run contained 4 double hits where 1 would be expected by chance. Unfortunately she was absent from class on the day the second run was completed.

Discussion of Second Year's Work

Unquestionably the main contribution of this study is the significant evidence it offers for the occurrence of one of the most challenging aspects of experimental parapsychology; namely, precognition. Whatever the ultimate conceptual framework and philosophic

implications of this term, the psi process designated by it was apparently functioning in the present experiment.

Sixty-nine percent of the subjects in the precognition experiment gave a positive deviation for the 12 testing sessions as compared to 31% who gave negative deviations. The results indicate that a group of subjects tested simultaneously and often over a lengthy period of time may continue to demonstrate psi. This gives an affirmative answer to the main question of this experimental study.

It does not appear that the different forms in which the stimulus material was presented had any specific effect upon the rate of scoring in this investigation, although the variations may have helped to strengthen the motivation. There was more evidence of psi distributed over the first half of the precognition experiment than the last half, and the high scoring was obtained when using three different types of record sheets. However, the continued use of novel variations in the form of the record sheet did not prevent a general decline in success. One might suppose, therefore, that motivational factors rather than the stimulus material per se would account for the difference in scoring between the first and the last half of the experiment.

Since the record sheet was changed each month, the same stimulus material was used in two sessions. Was there a decline effect over the four runs? The average run scores for the two runs of the first session of the month are 5.18 and 5.24; those of the second session, 5.27 and 5.12. There is no statistical difference in the run scores, though by inspection one can see that the last run gave the lowest average score. There is no real indication, however, that familiarity with the stimulus material affected the scoring, though it should quickly be added that these results are based on only four runs, or 100 trials, per subject.

It will be recalled that the vertical distribution of hits in the five segments of the clairvoyance experiment indicated a decline effect, contributed by the results of both the first and last half of the experiment. The vertical distribution of hits in the five segments of the run in the precognition study presents an incline rather than a decline effect, the highest deviation occurring on the last segment of the run. Though the six record sheets for the testing in no way

resembled the usual ESP record sheet, each of the four "runs"—despite the form—contained 25 numbered spaces for the recording of the subject's calls. Figure 2 shows that the incline effect was contributed from the data completed the last three months of the experiment. It is not possible to interpret this effect other than to suggest that apparently some factors, some variables, were introduced into the last half of this experiment which presumably did not exist during the first part.

A partial explanation may be found in the renewed effort that was expended in February to motivate the pupils to score. During the two sessions in February and the first session in March of the previous year's testing, the scoring was rather close to chance. In an effort to avoid a repetition of this slump, a deliberate attempt was made to build up the children's enthusiasm. While this consisted of nothing other than intensified verbal encouragement from Mrs. Gregory and me, it is interesting to note that the scoring in the two February sessions of the second experiment gave a deviation of + 53 (CR = 2.36; P = .018). However, in March the scoring dropped to about chance, but was followed by a positive deviation of + 29 in April.

The 19 boys and the 13 girls scored almost equally well. The boys contributed a deviation of + 64 on 368 runs in this experiment, whereas they gave a deviation of only + 6 on 440 runs of the clairvoyance experiment. One might suppose that the "space" element incorporated into this experimental design challenged the boys more than the clairvoyance experiment, which was somewhat "academic" in flavor.

The clairvoyance experiment of the preceding year gave suggestive positive results for the total 872 runs. The precognition experiment reported here, involving 28 of those same subjects, gave quite significant positive results on 732 runs. It cannot definitely be said whether the psi process which produced the clairvoyance results differs from, is similar to, or is the same as, the psi process which produced these precognition results. But the results as a whole suggest that, to the extent that "conditions" which are conducive to the functioning of psi exist, any desired manifestation of psi may reasonably be expected to occur.

General Discussion

The testing program reported here supports the hypothesis that the essential attitudes and motivation for ESP to operate *may* be cultivated, captured, and kept in effect with a group of unselected subjects over a long series of runs. With essentially the same group of students taking the ESP tests over the two-year period, the over-all deviation was at a suggestive level of significance the first year and increased to a clearly significant level the second year. However, it is not possible to say that there was a steady rise in performance throughout the two-year period. The highest level of ESP success was reached in the first half of the second year, including a striking "psi-missing" session early in December. Thus while the results as a whole show that a group can be tested successfully over a long interval of time, they do not justify the hope that ESP skill develops so that success can be taken for granted. There was a continuous effort on the part of both experimenters to whip up interest and draw out the subjects' ESP abilities.

It is interesting to observe that the session producing the largest negative deviation in both experiments occurred during the first test period in the month of December. It will also be noted that the second session in December in both experiments gave only chance results. Mrs. Gregory's letter of January 2, 1959, offers a possible explanation, for in it she states that "there were so many things going on during the month." It is quite possible that the children were distracted by the activities associated with the holiday atmosphere. There is evidence that psi occurred during the first session but the fact that the scoring was negative further suggests "subject distraction."

The hypothesis that psi will occur to the extent that conditions favoring success prevail in an ESP experiment is not, of course, new. It is only an extension of this hypothesis to suggest that a subject may score equally well on any type of psi test using a variety of target material if the conditions for the eliciting of psi exist. As others in the field have previously pointed out, an important question for present research is not Who has ESP? but How can we get it out of the subject?

Although psi is unconscious and we do not understand its nature, there has been a tendency for some parapsychologists to think of the process in terms of a perceptual model. The term "extrasensory perception" itself prompts this type of thinking, though there is no reason to suppose that the coining of this term was intended for more than convenience in identifying the phenomena. Murphy (9) reminds us that "it is an *assumption* (italics mine) that every paranormal cognitive process is inevitably a form of perception rather than a form of recall, recognition, phantasy, conceptual thought, or what not." He asks, "Are we sufficiently aware of the principles of general psychology to recognize that a paranormal process may be very far from a carbon copy of the material indicated in the target?"

There is an indication in this experiment that the psi process occurred within a framework of phantasy or imagination. The clairvoyance experiment was "fitted" into the regular classroom activity. After the children had gained confidence in the practice (testing) sessions they asked for target sheets in the form of stars. Then the "space rocket" record sheet emerged. There never was a time after the first experiment began that ESP as a "process" or ESP as a strange and mysterious element seemingly entered the subjects' thoughts.

The precognition study developed out of the clairvoyance experiment. This second experiment particularly, from the beginning, involved the uninhibited imagination, the expectancy, and the emotional anticipation of the subjects, Mrs. Gregory, and all of us who had a part in the experiment. In this study, the children were even less conscious of ESP as a process in their attitudes, I think, in that they were engaged in the task of recording or coding music for Mrs. Gregory and me to hear. To all intents and purposes, the subjects were "hearing" music in space. No effort was made to find out what the subjects were actually experiencing in this test situation, but it would be an interesting question to ask in further research. For example, did any of them have hallucinated auditory experiences? The point that may be important and that deserves attention in further research is the fact that the approach was not a rational or intellectual one, but at the same time the game-like phantasy used for

presenting the task seemed to give a definite direction and force to the students' responses.

The results of the present experiments are unquestionably attributable to many variables, not the least of which is the personality of the teacher, Mrs. Gregory. Over and above her strong interest in parapsychology, of course, is her dedication and devotion to the teaching profession. She is a respected and beloved teacher who obviously develops a creative and exciting class period in which her pupils are apparently much stimulated in whatever direction she indicates. She was enthusiastic about the testing program at the beginning, and, despite an illness which developed during the early fall of 1958 and still continues, that enthusiasm never diminished. This was apparent from her correspondence, particularly that part of it covering the precognition testing of the second year.

That a psi experiment involves a dynamic psychological interplay of two or more personalities is now widely recognized. J. B. Rhine (11), as well as many others, has written on this subject over the years. Yet there are still those who persist in approaching a parapsychological experiment with little apparent regard for, or appreciation of, the subtle psychological aspects of a real psi test. I do not think with what we know today about psi that it is too strong a statement to say that a researcher conducting a psi test dare not be indifferent to the psychological climate of the test; to do so is to run a grave risk of excluding the very phenomena he is trying to capture.

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PARAPSYCHOLOGY AND HUMAN NATURE

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INTRODUCTION

THIS LECTURE is concerned mainly with paranormal cognition[2] and its bearings on theories of human personality. The importance of the phenomena from a philosophical point of view is that they do not fit in with the current Western educated outlook. This is not because they cast any doubt on the validity of scientific method. But they do conflict with the materialistic conception of human personality. The theory which they suggest is a dualistic interaction theory, but a different one from the dualistic theory of Descartes.

Parapsychology, or psychical research as we usually call it in my country, may be roughly defined as the scientific investigation of paranormal phenomena. These phenomena have usually been divided into two main classes—mental and physical. The mental phenomena include the various forms of paranormal cognition: telepathy, clairvoyance, precognition. The physical phenomena include what is called psychokinesis or telekinesis—where some human being causes physical objects to move without bodily contact and without the use of any known physical intermediary.

In this lecture, however, it is the implications of the mental group of phenomena which I chiefly wish to discuss. Telepathy, clairvoyance, and precognition are the best established of all paranormal phenomena; and if he will allow me to say so in his presence, I think that Prof. Rhine has done more than any other living man to put them in that position. Whether we like it or not, telepathy, clairvoyance, and precognition do occur. The universe might be a neater and tidier place if they did not, and human personality also might be a neater and tidier thing. But we must put up with the facts as best we may; and if we have any philosophical curiosity, we must consider the bearings which they have on our theories of human personality.

[1] This article was delivered as a public lecture at Duke University on April 13, 1959, under the auspices of the Parapsychology Laboratory.

[2] Extrasensory perception.

Perhaps I should first say a word about the difference between telepathy and clairvoyance. It may be that the distinction is not in the end a hard and fast one. But it does seem on the face of it that there are two different types of paranormal cognition. In the first, information is paranormally acquired about some other person's mind: either about some experience of his or about other contents of his mind—for instance, his memories (including his subconscious memories). This is what happens in telepathy. Telepathy may be described as the mind-to-mind variety of paranormal cognition.

Secondly, there is the matter-to-mind variety of paranormal cognition, where information is paranormally acquired about some material object—for example, about a playing card in the middle of the pack, or about the contents of a sealed letter, or the whereabouts of some lost object. This is what happens in clairvoyance.

Precognition, I think, is best regarded, not as an independent cognitive power, but as one of the dimensions, so to speak, of telepathy and clairvoyance. It would seem that both telepathy and clairvoyance are in some degree independent of the physical time order. In telepathy, information may be got about something which is going to be in another person's mind at a later date. In clairvoyance, information may be got about some physical event which is going to happen but has not yet happened. Moreover, it would appear that both telepathy and clairvoyance are capable of going backwards in time as well as forward. They may be retrocognitive as well as precognitive.

I now turn to an important point about paranormal cognition in general. I must confess that I have always felt a little uncomfortable about Prof. Rhine's term "extrasensory perception." It is a very convenient term (especially in its abbreviated form, ESP). We could hardly get on without it, and I constantly use it myself, as almost all students of the subject do. But I think it would be a mistake to suppose that paranormal cognition is at all like seeing or touching or hearing, though it does sometimes manifest itself in consciousness in the form of a sensory hallucination; for example, in a hallucination of sight or hearing.

It seems to me that paranormal cognition is best regarded as a two-stage process. In the first stage, some piece of information is paranormally acquired at an unconscious level of the person's mind.

In the second stage, this information manifests itself in one way or another in his consciousness. I say "in one way or another" because it is important to notice that this second stage of the process may take many different forms. The paranormally acquired information may present itself in the form of mental imagery; in the form of a dream; or a "hunch" (an unreasoned but subsequently verified belief); or of an equally unreasoned impulse (for instance an impulse to go and see Mr. X or write a letter to him). Again, the telepathically or clairvoyantly acquired idea may make use of the neurological mechanism of hallucination to "get itself across" into the percipient's consciousness. That is what happens when an apparition is experienced, if the telepathic theory of apparitions is correct. But the hallucination need not take the form of an apparition. It might take the form of hallucinatory words conveying the paranormally acquired information, either spoken words or written ones. Or again, the paranormally acquired idea may manifest itself not so much in the percipient's consciousness as in his bodily behavior. This happens in automatic writing and also in the automatic speech which occurs in some forms of mediumistic trance.

It looks as if this second stage of the process was the difficult one, the stage of manifestation or emergence. The very fact that there are so many different ways in which a paranormally acquired idea may manifest itself suggests that there is some kind of barrier or censorship or resistance which has to be overcome. To speak anthropomorphically and metaphorically, it looks as if a paranormally received idea had an impulse or urge to manifest itself or make itself known in some manner, and chooses whatever way is easiest in the circumstances. This view of the matter is strengthened when we notice that sometimes the paranormally acquired idea can only "get itself across" in a disguised or symbolic form; or it can only get itself across when it is mixed in with other items which do not have a paranormal origin but are products of the percipient's own memory or imagination (thus a dream may be partly telepathic and partly not); or it does not itself succeed in getting into consciousness at all, but some other idea which is closely associated with it does. These seem to be ways of avoiding the vigilance of the "censor"; and in such cases we need to use something like the Freudian technique of dream interpretation to discover just what piece of paranormally

acquired information is trying (so to speak) to get itself into consciousness in this oblique manner.

In view of all this, it is not at all surprising that paranormal cognition is very far from being infallible. Even if the information received were always infallibly correct at the first or unconscious stage, all sorts of errors and distortions could still creep in at the second stage when it is "getting itself across" into consciousness. Moreover, telepathy and clairvoyance are not at present subject to voluntary control, or hardly at all. Some day, perhaps, they will be, when we have learned more about them. But at present these paranormal cognitive processes cannot be turned on or shut off at will, any more than artistic inspiration can, which appears to work in the same unconscious and uncontrollable manner. The most that can be done at present is to provide conditions which are favorable for their operation and then hope for the best. This is probably the point of various traditional practices like crystal-gazing which seem so utterly silly to hard-headed persons. I have read somewhere that Mongolian lamas use a rather similar method. They gaze at a lichen-covered stone and "read" Chinese characters in the wavy lines and patterns which they see. Such practices are probably rough-and-ready methods for encouraging unconscious mental contents to come to the surface. It may even be that some degree of telepathy and clairvoyance is going on all the time in all of us, and that what we need is not so much a method of turning them on and off at will (as I put it just now), but rather a reliable and voluntarily controllable method for ensuring that the information they give us will get into consciousness when we need it.

The Philosophical Implications

So much for some of the empirical facts about paranormal cognition. Now let us consider the philosophical implications of the facts. The phenomena which parapsychologists have discovered are important from a philosophical point of view just because it is so very difficult to devise a conceptual framework, a system of explanatory ideas, which will render the facts intelligible. On the face of it, the facts which have been discovered appear "not to fit in anywhere." Indeed, that is what we mean by calling them paranormal. This word would no longer be needed if there were some generally ac-

cepted system of explanatory ideas which would render the facts intelligible.

The task of inventing a suitable conceptual framework is surely one in which philosophers should take a hand, as their predecessors did in the seventeenth century, when a new conceptual framework had to be invented (or the old one drastically revised) to make sense of the then newly discovered facts about the physical world. The new facts would not fit into the medieval-Aristotelian conception of the universe. A kind of conceptual revolution was needed, and it may be that something like it is needed now.

What is required is, first, a set of concepts which will unify the paranormal facts themselves, what might be called a working philosophy of psychical research itself. That is the first stage, and so far, we are only at the beginning of it. But secondly, and still more difficult, we need a more comprehensive set of concepts which will unify the whole paranormal field with the rest of our knowledge, bringing it into intelligible relations with what we have learned from the established sciences and from everyday experience and observation. When this second stage of conceptual unification has been achieved, and not until then, words like "paranormal" and "supernormal" will no longer be necessary.

But why is it so difficult to devise the new system of explanatory ideas which is needed? It is because the facts which parapsychologists have discovered conflict in certain ways with what is called "the modern Western educated outlook." (They do not conflict to anything like the same degree with the medieval European outlook, nor with the educated outlook of the ancient Greco-Roman world, nor yet with the educated Hindu or Buddhist outlook, either ancient or modern.)

I use the word "outlook," for lack of a better one, to describe a set of assumptions or presuppositions (often unconscious and unformulated) which determine one's intellectual attitude to the facts or reported facts which are brought to one's notice. We use these presuppositions as standards of credibility and incredibility, of intelligibility and of unintelligibility.[3]

[3] These presuppositions have been described by Prof. C. D. Broad as "limiting principles."

Two Elements in the Modern Educated Outlook

What I have called the modern educated Western outlook is no doubt very complex. But for the purposes of the present discussion it will be enough to mention two of the most important elements in it. The first is the belief in scientific method. The second is something entirely different. It is a set of rather general beliefs or assumptions concerning human personality and its relation to the rest of the universe, beliefs about "the mind and its place in Nature," if I may borrow a phrase which Prof. C. D. Broad has used as the title of a well-known book. These beliefs about the mind and its place in Nature are logically independent of the belief in scientific method. They might conceivably be mistaken, or partly mistaken, even though the belief in scientific method was completely justified. But for historical reasons, going back to the eighteenth century or earlier, there has come to be a very close psychological connection between the two things—between the belief in scientific method on the one hand, and the beliefs concerning "the mind and its place in Nature" on the other.

I said just now that the facts which psychical researchers have discovered conflict in certain ways with the modern Western outlook. At what points do they conflict with it? First, do they conflict in any way with the belief in scientific method? I think they do not. It would be very strange if they did, because they have themselves been discovered by the use of that method. All the same, the question is not altogether free from difficulty, and it requires some discussion.

We generally assume that the mental attitude of the observer or experimenter makes no difference to the facts he is investigating, except indeed in introspective psychology, and that is one reason why the scientific status of introspective psychology has fallen under suspicion. For example, we assume that the state of mind of a chemist makes no difference to what is going on in his test tube, or that the thoughts or emotions of an astronomer make no difference to the behavior of the planets or the stars. But once we admit the existence of telepathy, it would seem that the mental attitude of the observer might very well make a considerable difference to the facts which he is observing—at any rate when he is observing or experi-

menting upon living creatures, especially other human beings. And another observer whose mental attitude is different might very well reach a different result.

We should all agree that the mental attitude of the observer might make such a difference if it was overtly expressed by words or gestures or by other forms of bodily behavior (for example, bodily symptoms of annoyance or fear or surprise) and that in psychological investigations carried out upon human beings or animals, or even sometimes in physiological ones, the observer must take precautions against this danger.

But if telepathy is occurring between the observer and the human being or animal he is investigating, or if we have no means of being certain that it is not occurring, these ordinary precautions will not be adequate. Even though he takes great care not to express his mental attitude by any overt symptoms, it may well be influencing the facts he is investigating; and another observer whose mental attitude is different might still reach a different result. This is the reason, I suppose, for the remark attributed to Wundt, that if the reality of telepathy were once admitted, experimental psychology would be dead. But experimental psychology is not the only science which would be affected. The same difficulty arises in all the sciences which investigate living creatures.

But there is another consideration which is still more disturbing, because it affects the purely physical sciences as well. It concerns telekinesis or psychokinesis. If once we admit the reality of this process, it becomes conceivable that even in the purely physical sciences the state of mind of the observer might make a difference in the occurrences he is investigating. The mental attitude of a chemist might after all make a difference to what is going on in his test tube. The *de facto* success which the physical sciences have had, the "objectivity" or public verifiability of their results, might then seem to be dependent on a piece of good luck. It might be due to the fortunate fact that psychokinetic powers are rare and that the people who have them do not in general become scientists. Physical mediums are not commonly found in scientific laboratories; nor are the psychopathic adolescents who seem to be responsible for at least some poltergeist phenomena. Or again, it might be that the attitude of impartial and disinterested investigation itself prevents one's psycho-

kinetic powers from being exercised if one has them. When a person is being trained as a scientist, perhaps he is also being trained (unconsciously) to inhibit any psychokinetic powers that he has.

What is to be said about these difficulties? Should we really have to admit that phenomena which have themselves been discovered by the use of scientific method cast doubt upon the assumptions underlying that method? An obscure and half-conscious fear that we might have to say something of the kind may account for the suspicion which many scientifically educated people show towards parapsychology, and for their unwillingness to examine the empirical evidence which parapsychologists have collected.

But fortunately the situation is not quite as bad as it may seem. In spite of what I have said about the implications of telepathy and psychokinesis, we can still use the test of public verifiability. If the discoveries which scientist X claims to have made do turn out to be publicly confirmable—if they are confirmed by all other investigators who take the trouble to repeat his observations or experiments—then we have very good ground for concluding that the occurrences which X observed really were independent of the thoughts, emotions, or wishes he had when he observed them; for the mental states of the other investigators who confirm his results are likely to have been different in each case—different from his and also different from one another. The more widespread this public confirmation is, the more likely it becomes that any telepathic or psychokinetic power which X might possess had nothing to do with the results he arrived at.

There is, however, an awkward fact, or apparent fact, which I confess has sometimes troubled me, and perhaps it has troubled other investigators too. It concerns the use of scientific method in psychical research itself. I shall purposely state the difficulty in rather an extravagant way. In some branches of psychical research, and most notably perhaps in the investigation of mediumship, it would seem that *faith* on the investigator's part is a necessary condition for achieving positive results; and sometimes not only faith but a considerable degree of hope and charity too. Every student of mediumship has noticed that there are not only good and bad mediums, but also good and bad sitters. But surely these Christian virtues are not

required in the physical sciences? There the results which a man gets surely do not depend in any way upon his moral character.

One might reply, no doubt, that some moral virtues are required in the orthodox sciences too, distressing as it may be to admit it: common honesty, for instance, and also a certain humility, as Thomas Huxley pointed out long ago. But this reply does not help much. Nor will it help to point out that in all the sciences a certain degree of faith is required—faith in the orderliness of the universe, or something of the kind—for that is quite a different sort of faith from the one we are here concerned with. Faith in the orderliness of the universe does not make the universe orderly; at the most, it is merely a precondition for finding out the kind of orderliness which the universe actually has. But the faith which the parapsychologist needs, in some of his investigations at any rate, would appear to be a precondition for the very existence of the phenomena he is investigating. If the faith is lacking, it would seem that the phenomena are thereby prevented from occurring.

But I would suggest that even in this case we can still use the test of public verifiability. If, or so far as, it is true that absence of faith (or of hope or charity either) tends to prevent the phenomena from happening, this fact, like any other, must be capable of being publicly established to the satisfaction of all observers. Suppose that faith is needed for getting positive results in the investigation of mediumship, or indeed that hope and charity are needed too: the reasons for accepting this fact, if it is one, must surely be empirical reasons. We should have to conduct what logicians would call a "second order" investigation, an investigation of what happens in mediumistic investigations. We should have to establish empirically, by observation, that when people investigate the phenomena of mediumship the results which they get vary with the degree of faith (or hope or charity) which they have, and that the results are completely negative when the investigator is very deficient in those qualities. The people who observe this correlation between the investigator's faith, or other qualities of character, and the results which he gets need not themselves have any faith at all, nor any hope or charity either. The only moral qualities they need are that modicum of common honesty and humility which are required for all scientific investigation whatever.

The Materialistic Conception of Human Personality

If I am right so far, the paranormal facts do not conflict with scientific method, the belief which is the first and most important of the assumptions or presuppositions which make up the modern Western educated outlook. What the paranormal facts do appear to conflict with is the second element which I distinguished in the modern educated Western outlook; namely, certain deep-rooted assumptions about "the mind and its place in Nature," or about human personality and its relation to the rest of the universe. It is assumed by the majority of modern Western educated people that in some form or other the materialistic conception of human personality must be the right one. Historically, there have been several different versions of this conception of human personality. The classical version of it is the theory which philosophers call epiphenomenalism, the theory that mental processes are unilaterally dependent upon brain processes, and are "epiphenomenal" in the sense that they are effects but never causes. Another and more modern version of the materialistic conception of human personality is behaviorism, of which, again, there are several different versions. Still another is the Marxian theory of human personality. An adherent of the modern educated outlook would not necessarily commit himself to any one of these theories as it stands. He might be willing to admit that no completely satisfactory formulation of materialism has yet been suggested. But what he takes to be unquestionable is that in some form or other the materialistic conception of human personality must be right, that in one way or another all mental processes must be completely explicable in terms of brain processes.

Behind this assumption there is perhaps another more general assumption which is seldom formulated clearly, the assumption that what is publicly observable is in some sense "more real" than what is not. It is assumed, perhaps, that either there is nothing at all which is not publicly observable, at least in principle; or that if there are some events or entities which are irremediably private—mental images, for instance, or thought processes or voluntary decisions—then somehow they have only a sort of second-class reality; and that such private events or entities, even though they do exist in a way, are no part of "the executive order of Nature" (to borrow a phrase

from Whitehead) and in predicting and controlling what goes on in the world no account need be taken of them. Bodily behavior, on the other hand, and also the brain processes which determine it, certainly are part of "the executive order of Nature"; and of course we must take full account of them in our attempts to control and predict events, at any rate so far as events on this planet are concerned. I am not suggesting that this preference for the publicly observable is something conscious and explicitly formulated—except in a very few philosophers. But I suspect that it has an unconscious influence on the minds of many modern educated people, and is one of the things which leads them to assume without question that in some form or other the materialistic concept of human personality must be the correct one.

Now I wish to suggest that the queer facts which parapsychologists have discovered are very difficult to reconcile with the materialistic conception of human personality in any of its forms. This is because of the extrasensory character of paranormal cognition. You may remember that some time ago I ventured to express a certain amount of discomfort about the term "extrasensory perception" on the ground that telepathy and clairvoyance have very little resemblance to what is ordinarily called perception. A better analogy or explanatory model for them might be provided by the Freudian theory of dreams. But though the *noun* "perception" does not seem to me to fit the facts very well, the *adjective* "extrasensory" does.

In paranormal cognition a person obtains non-inferential information concerning some event or state of affairs outside his own organism. Now according to the materialistic conception of human personality, there is only one way in which non-inferential information can be acquired concerning external matters of fact, namely as the result of the physical stimulation of one or another of our sense organs. It is assumed that for such information to be acquired there must first be a long and complex causal chain, beginning with an event outside the percipient's body and ending with an event in his brain, and it is assumed that the reception of a physical stimulus by a sense organ must always be included in this causal chain. But in paranormal cognition we seem to have a startling exception to this rule. Here we find that non-inferential information about some extra-somatic event or state of affairs is acquired by some process

which is independent of this causal chain, and the stimulation of a sense organ plays no part in the process.

Attempts have been made to get out of this difficulty by supposing that paranormal cognition is nothing more nor less than successful guessing. This very radical suggestion has been put forward by students of experimental paranormal cognition (such experiments are of course often called "card-guessing" experiments). After all, if we fix our attention on the basic experimental facts, what do they amount to but this, that with a number of subjects there is an above-chance correspondence between the symbols they mark down on the score sheet and the symbols which are printed on the target cards? Moreover, guessing is of course a very familiar phenomenon in daily life. In everyday experiences we have all met or heard of people who are unusually good at guessing. That is, their guesses are surprisingly often correct. Surely there is nothing paradoxical in the phenomenon of successful guessing, and it can have no bearing, one way or the other, on anyone's theories about human personality?

I have two comments to make on this. First, if someone's guesses are consistently correct over a long period, we are no longer willing to describe them as mere guesses. We think that there must be some explanation of his success, though he himself cannot tell us by introspection what the explanation is. (All he is conscious of is that this particular guess occurs to him, perhaps with a "feeling of rightness" attached to it.) For example, if a person is particularly successful at guessing the right answer to a certain sort of puzzle or riddle, it might be because he is very familiar with the mental habits of the people who invent puzzles or riddles of that sort, or it might be that he just happens to have similar mental habits himself. In the first case, his successful guesses are really a kind of inferences, though unconscious or subconscious ones. And what concerns us in discussing paranormal cognition is non-inferential information. The second explanation (similarity of mental habits) does not help us either, if the target cards or other target objects are selected by a random procedure. I think that the suggestion that paranormal cognition is merely successful guessing is just a refusal to look for any explanation of a set of surprising and paradoxical phenomena. At

the best, it is just a way of describing the problem which has to be solved, and not a solution of it.

But secondly, it is not even a good way of describing the problem when we take spontaneous cases into account, as well as experimental ones. It is true that there are some spontaneous cases where paranormal cognition does look like guessing; for instance, when someone has a veridical "hunch" about the location of some missing object or a sudden veridical conviction that one of his relatives is ill or in danger. But when the paranormal cognition takes the form of a dream or of vivid and detailed mental imagery, or of a hallucinatory voice, or (best of all) when a telepathic apparition occurs, it would be strangely inadequate to describe these experiences as examples of "guessing."

If someone wishes to argue that the facts of paranormal cognition can after all be reconciled with the materialistic conception of human personality, how is he to set about it? I think the only way which looks at all plausible is to postulate some new and hitherto unknown kind of matter, or some new and hitherto unknown causal properties in ordinary matter, or both.

Attempts have, of course, been made to explain telepathy and clairvoyance by means of physical radiations. But it must be pointed out that this is a process of pure postulation as far as our present knowledge goes. There is no independent evidence for the existence of the supposed radiations. They are not capable of being detected by any known physical instrument. There is no known way of intercepting them or diverting them. Nor is there any known receptor organ in the human body for receiving them. (I shall have more to say about this last point presently.)

Again, it is not easy to see how any physical radiation theory could account for precognition or (if you prefer to put it so) for the precognitive character which telepathy and clairvoyance sometimes have. What kind of a physical process could it be in which the effect is earlier in time than the cause? It would almost seem that we should be forced to postulate an additional physical world, over and above the ordinary one, and to suppose that it already contains duplicates of some of the future events which are going to occur later in our ordinary physical world.

The conclusion, so far, is this: the difficulties confronting a physical radiation theory of paranormal cognition can only be overcome, if at all, by transforming the ordinary scientific world picture in a pretty thorough-going way. We should be driven to postulate strange entities and even stranger processes which are certainly not part of the publicly observable world as we now know it; whereas the whole purpose of such a theory is to preserve the ordinary scientific world-picture and the materialistic conception of human nature which is a part of it.

Still further difficulties arise, as I have hinted already, when we consider the recipient's end of the process. In ordinary sense perception there have to be highly specialized and very complex receptor organs for receiving various kinds of physical stimuli. Otherwise, whatever radiations may be impinging on our bodies, they will not produce any experiences in us; they will not provide us with any non-inferential information about what is happening outside us. But in the human organism, so far as it is a publicly observable object, observable by anatomists and physiologists, there is no trace of any receptor organ which might be affected by the postulated telepathic or clairvoyant radiations.

I am inclined to think that if we are determined to preserve the materialistic conception of human personality we shall be compelled to postulate some sort of "astral body" or "hyperphysical" body. We shall have to suppose that the human organism is not merely what anatomists and physiologists declare it to be, but that it somehow contains in addition other sense organs (and presumably other nerves and brain centers) which are made of some "higher" kind of matter, capable of being affected by the postulated radiations in a way that our ordinary familiar sense organs are not. Conceivably, there might be a new version of the materialistic conception of human personality, what might be called occultistic materialism, or astral body materialism. Or perhaps it already exists in some quarters. There might, for instance, be a new version of epiphenomenalism in which some mental events (paranormal ones in particular) are held to be "epiphenomena" of processes in the astral body, while others—ordinary sense experiences, for instance—are held to be "epiphenomena" of processes in the familiar physical body.

But this is no consolation to ordinary materialists. What they have to do is to account for telepathy and clairvoyance in terms of what goes on in ordinary publicly observable human organisms which anatomists can dissect and physiologists can experiment upon. We may notice also that this "higher body" materialism would be compatible with the possibility of survival after death, a possibility which ordinary materialism excludes.

My conclusion so far is that the facts of paranormal cognition could only be reconciled with the materialistic conception of human personality by postulating new kinds of matter, both inside the human organism and outside it, and new kinds of physical and physiological processes—entities and processes which are certainly not part of the publicly observable world.

The facts which have been established by parapsychologists do seem to me to suggest strongly that there is something wrong with the materialistic conception of human personality and that this conception of human nature can only be saved (if at all) by abandoning the principle which is one of the main motives for holding it; that is, by giving up the principle that the publicly observable material world is the only reality there is, or at least the only reality in which causally relevant events occur.

But to be fair to all parties, there is something more I should like to add. People who are inclined to postulate new kinds of matter, either inside the human organism or outside it, may be feeling after something which does, I believe, deserve serious discussion; namely, the hypothesis of a *tertium quid* which is intermediate between mind and matter as traditionally conceived, and has some of the properties of both—something which is extended in space (or in some sort of space) and yet also has mental or quasi-mental properties. Some such hypothesis has been suggested by various speculative persons at various times from the seventeenth century to the present day. Indeed, if I am not mistaken, something like it was suggested by some of the Neoplatonist philosophers in the last century or two of the Roman Empire.

But whatever merits or demerits such a theory might have, it is utterly different from ordinary materialism, and it would be misleading to call it a materialistic theory at all. For the whole point of it is to suggest that the traditional disjunction between "materialistic"

and "anti-materialistic" theories is not exhaustive, and that there is a third alternative between the two.

The Dualistic Interaction Theory

Perhaps these remarks have already been long enough, and controversial enough. But before I end, I must say a few words about the theory of a two-sided interaction between mind and brain. This theory, sometimes called psycho-physical dualism, is of course the traditional alternative to the materialistic conception of human personality. It has often been rejected on purely a priori grounds. It has been said that psycho-physical interaction would be something inconceivable or unintelligible and therefore cannot possibly occur. These a priori objections seem to me to have no force at all. They derive, I think, from a mistaken conception of causation, in which the relation of cause to effect is confused with the quite different relation between ground and consequent, or premise and conclusion, an error which one would have hoped had been exploded once for all by David Hume more than two hundred years ago. What kinds of causation there are in the world is a purely empirical question, not to be settled by a priori methods. I think that Hume was right when he said that for all we can tell a priori "anything can cause anything." Nothing but experience can teach us what sorts of causal laws do in fact prevail in the world and what sorts do not.

But if we are inclined to go back to some sort of dualistic interaction theory, we must be very careful what sort of dualistic theory it is. Traditionally, the dualistic interaction theory is associated with the doctrine that every human mind is a substance, a psychical or spiritual substance, what Descartes called a *res cogitans*. And each of these mental substances was supposed to be indivisible, and moreover to be incapable of combining with any other. The world of minds, if I may put it so, was supposed to have an irreducibly pluralistic structure, though the world of matter might have a monistic one. This is the view of Descartes, whose formulation of the interaction theory is generally regarded as the classical one.

It seems to me that we shall never get anywhere in the philosophy of parapsychology (or in the philosophy of psychopathology either)

unless we firmly reject this Cartesian conception of indivisible and uncombinable mental substances. And so far as I can see, it is in no way a necessary consequence of the hypothesis of two-way mind-body interaction.

The phenomena of telepathy seem to me to show that a human mind is not an insulated mental substance. On the contrary, they suggest that at the unconscious level, there is no clear-cut boundary between one human mind and another. And the phenomena of psychopathology seem to me to show that the human mind is not an indivisible entity either. We must not ignore the strange and rather disconcerting facts of dissociated and alternating personality; and it seems likely that there is some degree of dissociation in every one of us, however sane and normal he may appear.

So if we do wish to accept the hypothesis of two-sided mind-body interaction, our theory of mind must be something much less neat and tidy than the theory of Descartes. It must not be a mental substance theory, but something more like the theory of Hume and of the Buddhists, in which the unity of a mind is regarded as a matter of degree, and not a matter of all or none; and a mind, such as your mind or mine, is regarded as a very complex series of interlinked mental events, some of which are conscious experiences, and others subconscious or unconscious. This suggestion would be compatible with the tripartite division of human nature into Body, Mind and Spirit which some religious thinkers, both eastern and western, have advocated. On this tripartite theory, the remarks in the text would apply to mind, but not to spirit.

My conclusion, then, is this: if the paranormal facts compel us to abandon the materialistic conception of human personality, and if we are therefore inclined to adopt a dualistic interaction theory instead, we must be careful to dissociate the interaction theory from the substantialist conception of mind which has been historically associated with it. If we do retain the substantialist conception of mind, our dualistic theory will be as irreconcilable with the paranormal facts as any of the materialistic theories are. Indeed, I am inclined to think that the unconscious influence which the indivisible-mental-substance theory still has upon our thinking is at present the

greatest single obstacle to the progress of parapsychology on its theoretical side. It has an inhibiting influence on our inventive powers and prevents us from constructing the new and no doubt very strange explanatory ideas which we need for making sense of the new and strange facts which parapsychologists have discovered.

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TWO REPETITIONS OF THE ANDERSON-WHITE INVESTIGATION OF TEACHER-PUPIL ATTITUDES AND CLAIRVOYANCE TEST RESULTS[1]

ABSTRACT: Two experiments were carried out to see whether the significant results previously obtained by other investigators with the same procedure could be repeated. The emphasis of the writers is upon finding a "repeatable experiment," which they suggest is a requirement for establishing the ESP hypothesis. They chose the Anderson-White research as the most promising procedure for the purpose since this experiment had already been conducted several times with significant results. The main objective of the A-W work has been to study the relationship between the ESP scoring of the members of a class and the attitudes of student and teacher toward each other.

In the first of the two replications the subjects were high-school students. As in the A-W work, each one was given a sealed envelope containing a list of ESP symbols and was asked to write what he thought they were. He was also asked to fill out a questionnaire to indicate his liking or dislike of the teacher, who administered the ESP test. The teachers were also asked to indicate their attitudes toward the students. The results were in the direction found by A-W; that is, when the student and teacher liked each other, the students' scores were positive, and when there was mutual dislike, the scores were negative. The ESP scores of the students who liked their teacher were significantly higher than those of the students who disliked their teacher.

The replication by the second experimenter was carried out with grade-school pupils as subjects, and the A-W procedure was followed here also. The results were insignificant.

Some summarizing comments on the subject of repeatability by the professor who directed the two researches form the third part of the report.

Mr. Deguisne and Mr. Goldstone were graduate students in the Department of Psychology of MacMurray College when the work was carried out. The third author, Dr. Crumbaugh, is Chairman of the Department of Psychology.—Ed.

PART I. HIGH-SCHOOL TESTS[2]

By Arnon Deguisne

The Problem

The purpose of this study is to investigate further the validity of the hypothesis of extrasensory perception, or ESP. While J. B. Rhine (4) and others have advanced much experimental evidence

[1] This article was presented as a paper at the second annual convention of the Parapsychological Association in New York City, Sept. 10-12, 1959.

[2] Part I is adapted from a thesis submitted in partial fulfillment of the requirements for the Master's degree in psychology at MacMurray College, June, 1958. The study was directed by Prof. James C. Crumbaugh.

for the support of this phenomenon, one of the main criticisms which has been advanced by those who do not accept ESP is the lack of repeatability of these experiments. The critics maintain that if ESP does exist, the positive experiments should be repeatable by independent experimenters in laboratories everywhere. This criterion of repeatability has not been demonstrated for any ESP experiment as yet. Critics therefore feel that until this criterion is met, it is unsound to assume that the positive experiments prove the existence of ESP.

The present experimenter has entered into this experimentation with what he believes to be an open mind. At the present time he looks with optimism at the positive results which have been achieved thus far but has categorically neither accepted nor rejected ESP, since the question of repeatability has not been answered fully as yet. The experimenter is simply attempting to add another link in the search for truth. He realizes full well that his work will neither prove nor disprove the existence of ESP, but is hopeful of contributing additional knowledge which, when combined with all eventual data, may give the final answer.

A study by Anderson and White (2) in the investigation of the relationship between high-school teacher-pupil attitudes and clairvoyance scores has shown the greatest promise to date for a repeatable experiment. It has been replicated with essentially the same results by Anderson (1) using grade school students as subjects and by Anderson and White (3) using high-school children. Following the view that if these results are genuine they will be validated by the majority of laboratories which repeat the experiment, the present experimenter has attempted to duplicate their procedure as exactly as possible. The hypotheses to be tested are basically the same as theirs: (a) the phenomenon of ESP occurs; and (b) if it does occur, the personality interaction between the experimenter and the subjects has a definite influence upon the results of the test; *i.e.*, when there is a mutually favorable attitude on the part of the teacher and pupil the results will be above chance expectation and when there is a mutually unfavorable attitude the results will be below chance.

To test the existence of this interpersonal factor, Anderson and White have designed an experiment using as their subjects a group of students in a public school system. The students were asked to rate their teachers on a number of factors relevant to teacher-pupil interaction, and the teachers in turn were asked to rate the students. The teachers then administered to the pupils a group clairvoyance test. Anderson and White's results consistently support their hypotheses.

The present experimental design follows explicitly that of the Anderson and White report on experimentation undertaken with students of the high-school level (3).

The Method

The subjects were 185 high-school students of the Jacksonville, Illinois, public school system. Three teachers with a total of seven classes participated.

The instructions given the teacher and the procedure were essentially the same as those given by Anderson and White (3), with a few minor changes that were necessary to fit this particular situation. The procedure is given below, and that portion which was followed *verbatim* is set off by quotation marks. The full intent of all other Anderson and White procedures was also followed, as will be apparent from a comparison of the unquoted portions with the corresponding procedures stated by these experimenters.

Having been given a set of instructions, the various teachers were asked to familiarize themselves with these instructions before administering them. They were asked to "tell," not "read," them to the class. In addition, ". . . the teachers were told that they were to: (1) distribute the test envelope to the student, (2) allow their students to answer a questionnaire concerning the teacher, a copy of which was shown to them at this time; and (3) indicate their attitude toward the student participating in the test." The teacher's attitude toward each pupil was indicated by a question which the teacher had to answer in the form of a *yes* or *no* statement: "If you could form your ideal group for this class, would you include this student?" All teachers offered their fullest co-operation.

For motivational purposes, the teacher expressed his desire that

the student do his or her best both for the student's own sake and even more for the teacher.

At the beginning of the test each student received an envelope containing an ESP target sheet on which were written five runs of ESP symbols, twenty-five trials to each run. The standard "shorthand" representations of the ESP symbols, as given on the published ESP score sheets, were used throughout the present experiment in order to simplify the recording of the subject's choices. The order of target symbols was made up from *Tables of Random Sampling Numbers* by M. G. Kendall and B. Babington Smith, 1954. A different target order was used for each sheet to avoid the "stacking effect"; the sheets were numbered and a carbon copy of each was kept on file at the MacMurray Psychology Department offices under lock and key. Each target sheet was placed between three sheets of opaque paper—two on top and one underneath—and enclosed in a manila envelope. "Two blank ESP record sheets for the subject's calls were then stapled to the outside of every envelope. There was a piece of carbon paper between these two outside sheets so that a carbon of each subject's ESP calls could be obtained. The carbon copies were used for an independent check."

The target symbols were reproduced on large cardboard cards and scotch-taped to the blackboard where all students could see them. "Each student was asked to write on the topmost outer record sheet the symbols that he thought were written in the corresponding blanks of the target sheet enclosed within the envelope. The students were allowed to write their own calls in their own way and at their own rate of speed.

"A small white envelope was stapled on the back of the manila test envelope. It contained a questionnaire regarding the student's opinion of the teacher. After the ESP test was completed, the teacher asked the students to fold the questionnaires and then to replace them in the white envelopes and seal them. He emphasized that the students should answer the questions honestly and assured them that he would not see their answers."

A word might here be said about the question which the teacher was requested to answer about the pupil. "It was thought [by Anderson and White] that a question stated in this manner, although

it did not directly ask whether or not the teacher liked the student, would nevertheless get at this fact indirectly. The teacher, it was assumed, would probably have to consider all the various factors making up his attitude toward the student in order to answer this question."

When the test was completed, the teacher gathered up the materials, along with the sheet on which he had recorded his attitude toward the pupils, and turned them over unopened to the experimenter who was waiting outside the door. The experimenter then put them under lock and key until he could score them.

The experimenter later proceeded to remove each questionnaire from the outside manila envelope to code it in agreement with the target record sheet, and to put it aside for later consideration. This was done so that the experimenter would not be influenced by the student's opinion of the teacher and thereby cause a possible carry-over in the scoring of the subject's target sheet. The experimenter proceeded to unseal and open the manila envelopes and to take out the target sheets. The name which each student had written on the outer record sheet was then written on the inner target sheet and on the carbon copy which was locked in the Psychology Department office.

The calls on the student's original call sheet were checked against the original target sheet. The carbon copy of the student's calls was independently scored against the carbon of the target sheets by another scorer. The results were compared, any differences in the scoring being corrected by a third scoring. Upon the completion of the scoring of the target sheets the student's rating of the teacher was scored, this also being done by an independent scorer with the differences being corrected. These raw scores were then transferred to a master sheet which in turn was rechecked. In this way, independent tabulations were made for each student on the basis of his ESP score, acceptance or rejection of him or her by the teacher, and his own rating of the teacher.

A word might also be said about the rating sheet which the pupil filled out concerning the teacher. It was scored on a ten-point basis. "It had been decided that a total rating in the range of 10–9 for the entire questionnaire would be indicative of a very positive or good

feeling; 8–7 would be considered average or good, while 6–0 would be regarded as negative or poor feeling." The first two ratings were, in actuality, combined to represent positive attitude in determining the significance of the difference between the scores of students with positive attitudes and of those with negative attitudes.

Results

The data were collected by three secondary school teachers from 185 students (grades 9–12), who were given a total of 925 runs or 23,125 trials. In keeping with the purpose and design of the experiment, the results were analyzed in relation to student and teacher attitudes.

The extent to which ESP scoring is related to the direction of the teacher's feeling toward the student is shown in Table 1. Even though the results were in the direction hypothesized, both the CR's of the negative and positive groups and the CR of the difference between them were insignificant.

Table 1

ESP Results as Related to Teacher's Attitude Toward Student

Teacher's Attitude Toward Student	No. of Subjects	No. of Runs	Av. Run Score	Dev.	CR*
Positive	137	685	5.07	+45	.86
Negative	48	240	4.87	−32	1.03
Total	185	925	5.01	+13	.21

CR_d (Pos. attitude—Neg. attitude) = 1.32

* Throughout the paper the associated probabilities are given only when significant.

Anderson and White pointed out that "the evaluation of the difference between the total trials and hits of two groups by means of the CR on the binomial hypothesis is only a statistical test of the chance hypothesis and it is therefore strictly relevant only to the question of evidence for ESP. Some other method for evaluating the difference between groups in a way that makes due allowance for the possible variation introduced by ESP itself must be used if one is to draw any conclusion regarding the effect of the difference in the conditions upon the ESP process" (3). Following the

previous studies, the experimenter has used for this purpose the chi-square test of the proportions of students above and at-or-below M.C.E. (mean chance expectation) in ESP scores under the two attitude-groups in question.

In order to evaluate in this way the consistency of the student's ESP scoring when the teacher was positive or negative in feeling, the results were arranged in a two-by-two contingency table (Table 2). Again, as before, when the ESP scores are evaluated in relation to the teacher's attitude toward the student, the results are insignificant.

Table 2

STUDENT ESP SCORE IN RELATION TO TEACHER'S ATTITUDE TOWARD STUDENT

	Teacher Positive	Teacher Negative	Total
Students with ESP Scores Above M.C.E.	65	22	87
Students with ESP Scores at or Below M.C.E.	72	26	98
Total	137	48	185

$x^2 = .41$ (1 d.f.)

Turning to another aspect of the experiment, we look at the direction of the student's feeling for the teacher in relation to his rate of scoring in ESP (Table 3). Here there is a significant deviation from chance in the 8–7 positive-feeling group and the CR_d between the total positive and total negative groups is very significant ($P = .0008$).

A chi-square test of consistency was made of the distribution of the ESP hits and misses in relation to the three levels of the student's attitude toward the teacher (Table 4). Here we also have a very high significance ($P = .0003$).

Again the consistency of the scoring obtained when the student was positive or negative in feeling toward the teacher was deter-

Table 3

ESP Results for the Three Levels of Student's Attitude Toward Teacher

Rating of Teacher by Student	No. of Subjects	No. of Runs	Av. Run Score	Dev.	CR	P
10-9 (Positive).....	55	275	5.00	+ 1	.03	....
8-7 (Positive).....	54	270	5.39	+106	3.23	.001
Total Positive Ratings.	109	545	5.20	+107	2.29	.022
6-0 (Negative).....	76	380	4.75	− 94	2.41	.016

CR_d (Total pos. rating—Total neg. rating) = 3.37
P = .0008

Table 4

Chi-Square Test of Distribution of ESP Scores in Relation to Student's Attitude Toward Teacher

ESP Results	Student's Rating of Teacher			Total
	10-9 Level	8-7 Level	6-0 Level	
Observed Hits.....	1376	1456	1806	4638
Expected Hits.....	1375	1350	1900	
Observed Misses.....	5499	5294	7694	18487
Expected Misses.....	5500	5400	7600	
Total.....	6875	6750	9500	23125

$\chi^2 = 16.16$ (2 d.f.)
P = .0003

mined by a two-by-two contingency table (Table 5). These results also came out with significance (P = .004).

The results of the ESP scoring obtained when both the teacher and the student were favorably disposed to each other are given in Table 6. Thirty-nine subjects who rated their teachers 10–9 were also given positive ratings by their teachers. The average run score is 5.08. At the other end of the scale, 23 subjects experiencing a mutually unfavorable relationship with the teacher gave an average run score of 4.77. Even though these results are in the predicted direction, the CR_d between these two conditions is insignificant.

Table 5

STUDENT ESP SCORE LEVEL IN RELATION TO STUDENT'S ATTITUDE TOWARD TEACHER

	Students with Positive Attitude	Students with Negative Attitude	Total
Students with ESP Scores Above M.C.E.	61	26	87
Students with ESP Scores at or Below M.C.E.	48	50	98
Total	109	76	185

$x^2 = 8.50$ (1 d.f.)
$P = .004$

However, if the CR_d of the 8–7 positive group and the mutually negtive group is found, there is a definite significance ($P = .007$).

Table 6

ESP RESULTS AS RELATED TO ATTITUDE OF TEACHER AND STUDENT TOWARD EACH OTHER

Rating of Teacher by Student	Teacher's Attitude Positive					Teacher's Attitude Negative				
	No. of Subjects	No. of Runs	Av. Run Score	Dev.	CR	No. of Subjects	No. of Runs	Av. Run Score	Dev.	CR
10-9 (Positive)	39	195	5.08	+ 15	.59	16	80	4.83	−14	.86
8-7 (Positive)	45	225	5.44	+ 98	3.27	9	45	5.18	+ 8	.65
Total Positive Ratings...	84	420	5.27	+113	2.76	25	125	4.94	− 6	.29
6-0 (Negative)	53	265	4.74	− 68	2.09	23	115	4.77	−26	1.33

CR_d (Total Pos. Rating—Total Neg. Rating) = 2.38
$P = .017$

Here again a two-by-two contingency table ascertained the consistency of scoring when the teacher and student were mutually positive and when they were mutually negative (Table 7). The resulting chi-square is insignificant ($P = .13$).

Table 7

STUDENT ESP SCORE LEVEL WHEN STUDENT AND TEACHER HAD SAME ATTITUDE TOWARD EACH OTHER

	Teacher and Student Positive	Teacher and Student Negative	Total
Students with ESP Scores Above M.C.E.	48	9	57
Students with ESP Scores at or Below M.C.E.	36	14	50
Total	84	23	107

$\chi^2 = 2.35$ (1 d.f.)

The most important aspect of the three studies concerns the interaction of the teacher's and student's feeling for each other. The results of the ESP scoring when the direction of the teacher's and the student's feeling is mutual are presented (for this experiment, Anderson, A-W-1, and A-W-2) in Table 8. As can be seen, the results are all fairly positive.

Table 8

SUMMARY OF ESP RESULTS AS RELATED TO ATTITUDE OF TEACHER AND STUDENT TOWARD EACH OTHER
(Anderson-White and Deguisne Experiments)

Experiment	Total Mutually Positive			Total Mutually Negative			P of CR_d (Pos.-Neg. Ratings)	P of χ^2 Consistency
	No. of Runs	Av. Run Score	CR	No. of Runs	Av. Run Score	CR		
A-W 1	550	5.37	4.39	185	4.63	2.50	1×10^{-6}	.005
M.A. 1	230	5.17	1.29	52	4.27	2.64	.003	.006
A-W 2	505	5.30	3.38	175	4.53	3.14	.00001	.002
Deguisne	420	5.27	2.76	115	4.77	1.33	.017	.130

The present experimenter feels that one reason why the teacher's attitude toward the student did not affect the ESP scores as greatly as the student's attitude toward the teacher may be the ambiguity of

the one simple *yes* and *no* question by which the teacher rated the pupil. One teacher (who furnished 141 out of 185 subjects for the present experiment) asked the experimenter what this question meant. After explaining to her that this particular question was designed to take in such aspects as I.Q., character, personality, willingness and desire to work and grow, and interest in the subject, the teacher replied to the effect that she would like to keep the whole class intact—even though there were some black sheep in it, they all had some good in them. Judging from that conversation, the present experimenter feels that this method of rating the pupil was not discriminating enough.

Summary and Conclusions

The validity of the ESP hypothesis has been challenged by some critics on the grounds that, as yet, the criterion of repeatability has not been demonstrated in any experiment. The present study is an attack upon the repeatability problem by duplication of the earlier experiments done by Anderson and White (1, 2, 3) in which it was hypothesized that: (a) the phenomenon of ESP exists, and (b) the personality interaction between the experimenter and the subjects has a definite influence upon the results of ESP tests. Their experimental design, apparently having been successfully repeated several times by them, seemed a good starting-point for the purpose.

The results of the present study show that when comparing ESP scores with the teacher's attitude toward students, scores made by preferred students tend to be higher, though not significantly so, than scores of disliked students. When the ESP scores are compared with students' attitudes toward the teacher the scores of students who show satisfactory interpersonal relationship with the teacher are significantly higher than those of students who experience poor relationships. Both of these findings are in the direction predicted and found by Anderson and White.

There are divergent meanings and interpretations of repeatability which still leave this issue confused. For example, if one adheres to the concept of repeatability, to what extent must a phenomenon be repeatable? Do psychological factors exclude the possibility of repetition in the strict sense of the word or do they merely allow extention to similar situations with the view of finding regularity?

The results of the present experiment lend support to the latter view. Upon examining the results of all repetitions of the Anderson-White experiment, the present experimenter would also conclude that they demonstrate some degree of repeatability of this experimental design.

The question of repeatability of ESP results probably will not be answered fully and completely to the satisfaction of all individuals involved for some time to come. Rhine and Pratt (**5**) refer in their index to the subject of repeatability as "repeatability (so-called)." If and when the concept is accepted by all, there will still be additional criteria which must be settled upon, such as the number of successful repetitions required, and so-forth. From the beginning work with the present experimental design (**1**, **2**, **3**), and even back to its germination in the van Busschbach work (**6**), the chief interest of the experimenters has not been that of repeatability *per se*, but rather of the effect of interaction of mutual attitudes in the classroom situation upon ESP which has been already assumed to exist.

In conclusion, then, this experimenter is of the opinion that the present study lends support to the ESP hypothesis. He must admit at the same time, however, that it is also a convenient frame of reference for his religious feelings and attitudes. He realizes that the issue is not completely settled as yet, but will demand additional research and untiring effort to find the final answer.

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PART II. GRADE SCHOOL TESTS[2]

By GERALD GOLDSTONE

THE PROBLEM

THE PURPOSE of this study is to investigate further the validity of the hypothesis of extrasensory perception, or ESP. A study by Anderson and White (2) in the investigation of the relationship between teacher-pupil attitudes and ESP scores has shown the greatest promise to date for a repeatable experiment. It has been replicated by Anderson (1) and by Anderson and White (3) with essentially the same results. Following the view that if these results are genuine they will be generally validated by the majority of laboratories which repeat the experiment, the present experimenter has attempted to duplicate as exactly as possible this same procedure.

The present experiment is advanced as a check on the Anderson and White results. The experimental design has been taken from the Anderson and White report (3) which has combined the results of experimentation on students of the fifth and sixth grade with those of students on the high-school level. This experimenter has concerned himself with repeating the work of only the grade-school students.

THE METHOD

Six teachers were asked to participate in this experiment. Three of these were fifth-grade teachers, while the other three taught sixth grade. All six were known directly or indirectly by the experimenter, and represented the fifth and sixth grades of two separate schools.

The instructions that they were given and the method that was followed is essentially that of the Anderson-White (A-W 2) experiment (3). The entire procedure was identical with the repetition carried out by Deguisne, whose report forms Part I of this article, except that the present subjects were grade-school children instead of high-school students, and they were therefore given the question-

[2] Part II is adapted from a thesis submitted in partial fulfillment of the requirements for the Master's Degree in psychology at MacMurray College, June, 1958. This study was directed by Professor James C. Crumbaugh.

naire which Anderson gave to the fifth and sixth grades (1) instead of the one used for high-school students.

Results

In order to make it easier for the reader to compare the results of this study with those of the preceding Anderson-White experiments and the study by Deguisne, the results are presented in a manner that closely parallels that of the Anderson-White papers.

Three fifth-grade and three sixth-grade teachers tested 160 subjects (79 fifth-graders and 81 sixth-graders), who completed a total of 800 runs, or 20,000 calls. The total number of hits was 3,930, that is, 70 below the mean chance expectation, which is insignificant.

Table 1 deals with the relationship between ESP scoring and the direction of the teacher's feeling. Where the teacher is positive in feeling toward 113 students, the average run score is 4.88. The 47 subjects to whom the teacher is negative in feeling gave an average run score of 5.00. The CR of the difference between the two groups is .80, which is not significant.

Table 1

ESP Results as Related to Teacher's Attitude Toward Student

Teacher's Attitude Toward Student	No. of Subjects	No. of Runs	Av. Run Score	Deviation	CR*
Positive.....	113	565	4.88	−70	1.47
Negative.....	47	235	5.00	± 0	....
Total.....	160	800	4.91	−70	....

CR_d (Pos. attitude—Neg. attitude) = .80

*Throughout the paper the associated probabilities are given only when significant.

In order to evaluate the consistency of the scoring obtained when the teacher was positive or negative in feeling, the results were arranged in a two-by-two contingency table. The number of subjects whose total score exceeded the mean chance expectation (M.C.E.) and the number whose scores were at or below M.C.E. are divided according to the teacher's feelings and given in Table 2. The results of this analysis of individual scoring trends in relation to the teacher's attitude are not significant.

Table 2

STUDENT ESP SCORE LEVEL IN RELATION TO TEACHER'S ATTITUDE TOWARD STUDENT

	Teacher Positive	Teacher Negative	Total
Students with ESP Scores Above M.C.E.	48	24	72
Students with ESP Scores at or Below M.C.E.	65	23	88
Total	113	47	160

$x^2 = .989$ (1 d.f.)

The direction of the student's feeling for the teacher as related to his rate of scoring is presented in Table 3. The 81 subjects who reacted to the teacher at the highest positive level gave an average run score of 4.92. The 61 subjects at the other end with a negative attitude toward the teacher gave an average run score of 4.83. The CR of the difference between these two groups is .59. The 18 subjects who were in the average-to-positive group of feeling for the teacher had an average run score of 5.16, and the CR of the difference between the average-positive and the negative group is 1.38. The 99 subjects of the combined positive groups gave an average

Table 3

ESP RESULTS FOR THE THREE LEVELS OF STUDENT'S ATTITUDE TOWARD TEACHER

Rating of Teacher by Student	No. of Subjects	No. of Runs	Av. Run Score	Dev.	CR
10-9 (Positive).....	81	405	4.92	−31	.77
8-7 (Positive).....	18	90	5.16	+14	.74
Total Positive Ratings.....	99	495	4.97	−17	.38
6-0 (Negative).....	61	305	4.83	−53	1.52

CR_d (Highly Positive—Total Negative) = .59
CR_d (Average to Positive—Total Negative) = 1.38
CR_d (Total Positive—Total Negative) = .96

run score of 4.97. The CR of the difference between these positive 99 subjects and the 61 negative subjects is .96. None of these differences is significant.

In order to determine the consistency of the scoring when the student was positive or negative in feeling, the results are arranged in a two-by-two contingency table (Table 4). All subjects whose ratings were positive (both the 10–9 and 8–7 levels) are included in the positive group in the table. The chi-square of 1.049 (1 d.f.) is insignificant.

Table 4

STUDENT ESP SCORE LEVEL IN RELATION TO STUDENT'S ATTITUDE TOWARD TEACHER

	Students with Positive Attitude	Students with Negative Attitude	Total
Students with ESP Scores Above M.C.E.	46	24	70
Students with ESP Scores at or Below M.C.E.	52	38	90
Total	98	62	160

$\chi^2 = 1.049$ (1 d.f.)

Table 5 gives the results of the ESP scoring when the direction of the teacher's and the student's feeling is the same. Fifty-nine students who rated their teacher at the highest possible level, or 10–9, were also given a positive rating by their teachers. The average run score is 4.88 (CR = 1.02), which is not significantly different from chance expectation. At the lower level of the scale, 19 subjects experiencing a mutually unfavorable relationship with the teacher scored an average of 4.75 hits per run (CR = 1.23). Neither this condition nor the CR of the difference between the two conditions shows any significant deviation from chance. Combining the highly positive, or 10-9, group with the average-to-positive, 8—7, group where the teacher is positive gives an average run score of 4.88. The CR of the difference between this combined group and the mutually

negative group is also not significant. Here, again, a two-by-two contingency table has been made to ascertain the consistency of scoring when the teacher and the students are mutually negative. The chi-square did not yield significance (Table 6).

Table 5

ESP Results as Related to Attitude of Teacher and Student Toward Each Other

	Teacher's Attitude Positive					Teacher's Attitude Negative			
Rating of Teacher by Student	No. of Sub.	No. of Runs	Av. Run Score	CR	P	No. of Sub.	No. of Runs	Av. Run Score	CR
10-9 (Positive).....	59	295	4.88	1.02	....	22	110	5.04	.19
8-7 (Positive).....	11	55	4.89	.04	....	6	30	5.67	1.82
Total Positive Ratings	70	350	4.88	1.1	....	28	140	5.2	1.18
6-0 (Negative).....	43	215	4.87	.98	....	19	95	4.75	1.23

Table 6

Student ESP Score Level When Student and Teacher Had Same Attitude Toward Each Other

	Teacher and Student Positive	Teacher and Student Negative	Total
Students with ESP Scores Above M.C.E.	30	8	38
Students with ESP Scores at or Below M.C.E.	41	11	52
Total	71	19	90

$\chi^2 = .000$ (1 d.f.)

Summary and Conclusions

The general purpose of this study was to investigate further the validity of the ESP hypothesis by replicating the Anderson and White experiment with grade-school students. It has been proposed

that there is a positive correlation between ESP scores and a favorable subject-experimenter relationship. The present experimenter has replicated as exactly as possible the experimental design utilized by Anderson and White to test this relationship. As in the Anderson and White studies, the students were asked to rate their teacher on a number of factors relevant to teacher-pupil interaction. The teacher then administered a group test of ESP, assuming the role of experimenter by giving instructions for the performance of the test and encouraging the students to do well. The teacher in turn was asked to rate the students by answering *yes* or *no* to the question, "If you could form your ideal group for this class, would you include this student?"

All relationships that were being examined in this experiment yielded insignificant results, and therefore fail to support the hypothesis.

In final summation it may be said that the present experiment offers no support for the existence of the ESP phenomenon, or for an effect upon ESP scores of the interpersonal relationship between the experimenter and the subject. It must be pointed out, however, that the Anderson-White experiment has not yet been repeated sufficiently for any conclusions concerning the validity of the ESP hypothesis to be drawn from it alone.

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PART III. COMMENT ON THE DEGUISNE AND GOLDSTONE STUDIES

By JAMES C. CRUMBAUGH

AS ONE WHO HOLDS that the criterion of repeatability of results is a cornerstone of all science, the present writer has long insisted that the ESP hypothesis can never be conclusively proven until this standard has been fully met. Feeling that the Anderson-White studies offered the best prospect of a repeatable ESP experiment to date, and that if their results were valid they would be borne out on further repetition, he interested his students in this project.

One student's findings appear to support the ESP hypothesis while the other work, being at the chance level, does not. But the chief value of these studies lies in the indication that the Anderson-White experimental design is a convenient and fruitful one around which to center a major attack upon the ESP problem. It is therefore important to urge as many other laboratories as possible to repeat this experiment. If a number of independent and reputable experimenters who have already demonstrated competence in investigating more orthodox psychological problems will repeat these identical experiments as exactly as possible, and if there is a clear general consistency in the results, this will do more to modify the opinions of the still-skeptical majority of psychologists than another quarter century of "positive" ESP experiments by a small handful of experimenters, drawn from a conglomeration of disciplines, and some quite undisciplined, who continue to produce all sorts of isolated experimental designs without offering any one as repeatable. As R. A. Fisher has pointed out, "Very long (statistical) odds . . . are much less relevant to the establishment of the facts of nature than would be a demonstration of the reliable reproducibility of the phenomena."[4]

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[4] ESP Symposium at the A.P.A., *J. Parapsychol.*, Dec., 1938.

BOOK REVIEWS

THE PROBLEMS OF PERCEPTION. By R. J. Hirst (Lecturer in Logic in the University of Glasgow). Muirhead Library of Philosophy 1959. London: George Allin and Unwin, Ltd. New York: The Macmillan Company. 330 pp.

This book, by one of the younger British philosophers, is a notable contribution to epistemology. Mr. Hirst is an acute, careful and ingenious writer who is able to throw new light on old and familiar problems. Moreover, he has paid more attention than most professional philosophers do to the relevant psychological facts. One of the most interesting and original parts of his book is his treatment of the Representative Theory of Perception, a theory which was suggested by scientific discoveries about the very complex physical and physiological happenings upon which sense perception depends. When we see a star, for instance, a visual experience is the last link of a complicated causal chain extending over a long distance both in space and in time. This naturally leads to the theory that all we are actually aware of in perception is a series of ideas or sensations or sense data which are representations—and not very accurate ones—of the external objects which stimulate our sense organs. This Representative Theory of Perception was first stated by Locke in the 17th century; and despite the numerous difficulties which philosophers have found in it from Berkeley's time onwards it is still accepted to this day by many workers who approach the epistemological problems of perception from a neurological point of view. (Sir R. Brain and Dr. J. R. Smythies are recent examples.)

Mr. Hirst takes the Representative Theory much more seriously than most philosophers do, and I think he succeeds in showing that there is a good deal more to be said for it than most philosophers suppose. His own theory of perception, stated in the last chapter of the book, might be regarded as an improved version of the Representative Theory, designed to preserve its strong points and to remove its weaknesses. The most important of those weaknesses, in his view, is the dualistic theory of the mind-body relation which most of the Representationists have held. He proposes to replace this

by a "double aspect" theory, which he expands in Chapter 7 of the book.

The double aspect theory of the relation of mind and body is not, of course, new. What is new is the careful and detailed way in which Mr. Hirst expands it. The essential contention is that mind and body are not two distinct entities, but the same entity regarded, as it were, from two radically different points of view. This entity is just the person, the living and conscious human organism. The relation between a mental activity and a brain activity is therefore not a causal one at all, and we do not need to puzzle ourselves by asking what sort of a causal relation it could be. For these are not two different activities at all, one in the mind, the other in the brain. There is just one activity, but there are two radically different ways of being aware of it. On the one hand it can be *experienced* (and sometimes also introspected) by the person whose activity it is; and under this "mode of access" it is a mental activity. On the other hand it can be *observed* by these persons, or at any rate it is in principle observable, though only with the aid of scientific instruments. Under this quite different mode of access it is a brain activity or brain process, something which occurs in the publicly observable world.

The problem of the relation of mind and brain is one which concerns parapsychologists closely. For this reason alone this chapter would deserve their attention. But there is a more special reason as well. Mr. Hirst himself is aware that his double aspect theory is not easily reconciled with the paranormal facts, and especially with the phenomena of psi cognition. He discusses this difficulty in Chapter 7, Section 5 ("An Objection From Parapsychology," pp. 203-7). Here he offers some criticisms of Dr. Rhine's defense of dualism in *The Reach of the Mind*. I shall give a brief summary of his criticisms and make a few comments upon them.

Spontaneous cases, he thinks, can safely be disregarded; and the experimental evidence for PK is too weak. He therefore concentrates on the experimental evidence for ESP and argues that this does nothing for the dualist hypothesis. First, the phenomena are not conscious ones, and if they establish anything about the mind, it is about the unconscious mind, which is in any case a problem for

dualism. We must admit, I think, that the unconscious mind *is* indeed a problem for Descartes' version of dualism, since Descartes defined "mind" in terms of consciousness. But there is no good reason to accept this definition.

Secondly, Mr. Hirst contends that if the dualist theory were right, telepathy ought to be the best established and most frequent of all psi phenomena (I do not clearly see why); whereas Dr. Rhine himself admits that it is the least well established and the least frequent. There does not seem to be much force in this argument. The point surely is that clairvoyance is as extra-sensory as telepathy. Neither of them is dependent upon the physical stimulation of a sense organ, and no cerebral correlates have been discovered for either.

Mr. Hirst also points out that ESP is "fantastically inefficient compared with normal perception by the senses; on pure chance you get 20 per cent right, and the best ESP subjects average 28 per cent right, i.e., less than one correct answer in ten can be attributed to the mind" (p. 205). The argument seems to be that if an observed effect is very small, it cannot have any important theoretical implications. The history of science hardly supports such a view. A loadstone, compared with a crane, is a fantastically inefficient way of lifting weights. All the same, the existence of magnetic properties, however small in degree, is of the greatest theoretical importance.

Mr. Hirst also objects that "Rhine's [dualistic] hypothesis leaves us in the dark as to how these allegedly mental capacities work" because they do not display any positive mental characteristics, e.g., consciousness, rationality. So the hypothesis that they are capacities of a trans-physical mind does not explain anything, and is a mere *refugium ignorantiae*. I would suggest, however, that the question How does ESP work? can at any rate be divided into two distinct questions. The first is How can ESP impressions be received or obtained at the unconscious level? To this we have no answer at present, beyond saying that the stimulation of a physical sense organ appears to have nothing to do with it. The second question is How do unconsciously received ESP impressions manifest themselves in consciousness or in bodily behavior? The study of spontaneous cases suggests at least the beginnings of an answer to this question. The

investigations of depth psychologists have thrown some light on the ways in which unconscious contents may manifest themselves, e.g., by means of dreams, hallucinations, and motor automatisms. It looks as if unconscious ESP impressions manifest themselves in analogous ways. In this respect, then, ESP appears to be as "mental" as one could wish, though it is very different indeed from conscious and rational inference.

The concluding words of Section 7 are these: "The theory I suggest [i.e., the double aspect theory] does not explain the few facts of parapsychology—no theory has yet succeeded in doing this—but at least it is not rejected by them; for there is nothing to prove that the exercise of these powers by a human being does not require a properly functioning brain or that it is unaccompanied by brain activity." Certainly there is nothing to prove this (though a study of some spontaneous cases, especially some "out of the body" cases, might suggest doubts about the epithet "properly functioning"). But can it be shown that ESP phenomena have the *detailed* correlation with brain processes which normal sense perceptions have and normal thought processes presumably have? This is what the double aspect theory would require.

H. H. Price

PARAPSYCHOLOGICAL ABSTRACTS

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[This section consists of abstracts of reports published in other journals and of unpublished reports filed at the Parapsychology Laboratory at Duke University. Readers may obtain unabridged copies (Thermo-Fax) of the unpublished reports by writing to the *Journal of Parapsychology*, College Station, Durham, N. C. The price is ten cents per page.]

MURPHY, G. A comparison of India and the West in viewpoint regarding psychical phenomena. *J. Amer. Soc. psych. Res.*, 1959, **53**, 43-49.

From extensive discussions with Indian psychologists and other professional people in India, Dr. Murphy has noted certain broad differences with the West in the accent and emphasis given psychical phenomena. To the common-sense Western view of the world they appear strange and discordant, whereas the Indian point of view stresses the naturalness of these phenomena. However, parapsychical occurrences do not seem very important within the Indian frame of reference. They are even regarded by some as temptations that lead away from the achievement of the highest spiritual reality and, hence, they must not be cultivated or specially stressed by research. An exception to this are some of the extraordinary forms of self-control such as the reputed cessation of heartbeat or respiration practiced by the yogis, their reported immunity to fire, etc. Unfortunately, there have not yet been any really adequate studies of parapsychical phenomena in India, although some investigations are now being initiated. One difficulty is that the Indian includes much more in the category of "psychical" than we would include. Dr. Murphy traces briefly the historical development of Indian and Western thought about parapsychical phenomena.

PARSONS, D. Examination of a dowser. *J. Soc. psych. Res.*, 1959, **40**, 12-16.

No evidence of any extrachance factor appeared in a series of tests conducted by the author with the dowser, Mr. D., attempting

to locate a variety of buried or hidden objects with L-shaped steel rods. On the other hand, whenever Mr. D. knew the exact location of the object his rod moved over it with one hundred percent success, with the notable exception that when the rods were covered with cardboard tubes to prevent direct contact with the hands, no reaction occurred. Mr. Parsons discusses the common failure of dowsers in scientific tests as compared to their reported success on other occasions.

POORTMAN, J. J. The feeling of being stared at. *J. Soc. psych. Res.*, 1959, **40**, 4-11.

A small exploratory series of experimental trials is reported in which the author, as the percipient, attempted to guess whether or not the agent, a Mrs. R.-V., was staring at him (whether she did so or not was determined each time by the drawing of a red or black card from a shuffled deck). In 89 trials, each lasting from two to five minutes, the percipient gave 53 correct guesses (59.55% success). The first three of the 10 sessions contained 13 correct guesses in 18 trials (72.22% success), following which there was a decline in positive results. Dr. Poortman discusses at length his own impressions concerning this "feeling of being stared at" phenomenon, and cites examples from his own experience, from interviews with others, and from the literature, both fiction and nonfiction, which have dealt with this subject.

RHINE, J. B. What do parapsychologists want to know? *J. Amer. Soc. psych. Res.*, 1959, **53**, 3-15.

The parapsychologist's broad area of unanswered questions can be broken down into three natural divisions: pure or basic science, its application, and a zone of implications. Dr. Rhine feels that basic research is the main concern of workers in this field because of the imperative need for fundamental knowledge concerning psi without which understanding of its application or implications would be impossible. Major research interests center on the frontiers that parapsychology shares with physics, biology, and psychology. Parapsychologists want to know what the connection is between parapsychical abilities and the physical order with which they interact.

What are the time and distance limits of precognition, for instance, or the size, density, and shape limits of PK targets? Parapsychologists want to know the range of psi in animal species, following which they might infer its evolutionary origin and something about its occurrence in the morphological development of the organism. The psi process is already established as psychological, but more must be learned about this relationship before reliable control of psi can be achieved. Perhaps most helpful would be the discovery of how basic ESP and PK operations are converted to manifest effects that can be experienced or observed.

Parapsychologists as well as those who support them are interested in a number of applied problems, some of great urgency to mankind. At the present time, however, workers are faced with almost insurmountable difficulties in trying to obtain anything sufficiently decisive for science on such topics as unorthodox faith-healing, divination, or post-mortem survival. Complex variables in the practical situations prevent necessary research controls, and certain basic questions must be answered first by research on the basic nature of psi.

Although not always verbalized, some notion of the implications of parapsychological findings probably forms a part of every parapsychologist's motivation. Dr. Rhine feels that these implications are highly significant for our concept of the nature of man, and hence for society.

ULLMAN, M. On the occurrence of telepathic dreams. *J. Amer. Soc. psych. Res.*, 1959, **53**, 50-61.

On the basis of his observations as a psychoanalyst over a period of years, Dr. Ullman describes a "constellation of circumstances" relating to the analyst (presumably himself) which he regards as predisposing to the occurrence of telepathic dreams in the therapeutic setting. These include (1) the analyst's heightened interest in telepathy such as he feels immediately preceding the meeting of the Medical Section of the A.S.P.R. where such cases are discussed; (2) a specific need on the part of the analyst for telepathic dreams from his patients such as he feels while preparing papers for these meetings; (3) anxiety present in the analyst's life aside from the par-

ticular doctor-patient relationship in which the dream occurs; and (4) potential anxiety for the analyst if the content of his thoughts were at that moment made known to the patient. Three dreams are presented to illustrate these conditions of interest, need, and anxiety. Ullman also describes briefly some characteristics he has noted in a very small group of patients regarded as consistent telepathic dreamers.

Erratum

In the article "A Probabilistic Model for ESP" by N. T. Gridgeman in Volume 23, No. 2 (June, 1959) the following correction should be made:

Page 131, equation (5) should read:

$$SE(\hat{p}_e) = \frac{s}{s-1}\sqrt{\frac{r(n-r)}{n^3}}$$

instead of:

$$SE(\hat{p}_e) = \frac{s-1}{s}\sqrt{\frac{r(n-r)}{n^3}}$$

GLOSSARY

A description of the basic experimental methods, of the findings, and of the statistical procedures for evaluating ESP and PK results may be found in *Parapsychology, Frontier Science of the Mind* by J. B. Rhine and J. G. Pratt (published by Charles C. Thomas, Springfield, Illinois, U.S.A., Blackwell Scientific Publications, Ltd., Oxford, England, and The Ryerson Press, Toronto, Canada).

AGENT: The "sender" in tests for telepathy, the person whose mental states are to be apprehended by the percipient. In GESP tests, the person who looks at the stimulus object.

BT (Basic Technique): The clairvoyance technique in which each card is laid aside by the experimenter as it is called by the subject. The check-up is made at the end of the run.

CALL: The ESP symbol selected by the subject in trying to identify a target.

CHANCE: The complex of undefined causal factors irrelevant to the purpose at hand.

Chance Expectation = Mean Chance Expectation: The most likely score if only chance variation is present.

Chance Average: Mean chance expectation expressed as an expected score, generally in terms of average per run.

CHI SQUARE: A sum of quantities each of which is a deviation squared divided by an expected value. Also a sum of the squares of CR's.

CLAIRVOYANCE: Extrasensory perception of objective events as distinguished from telepathic cognition of the mental activities of another person.

CR (Critical Ratio): A measure to determine whether or not the observed deviation is significantly greater than the expected random fluctuation about the average. The CR is obtained by dividing the observed deviation by the standard deviation. (The probability of a given CR may be obtained by consulting tables of the probability integral, such as Pearsons.)

CR_d (Critical Ratio of the Difference): The observed difference between the average scores of two samples of data divided by the standard deviation of the difference.

DEVIATION: The amount an observed number of hits or an average score varies from the mean chance expectation or chance average. A deviation may be total (for a series of runs) or average (per run).

DISPLACEMENT: ESP responses to targets other than those for which the calls were intended.

Backward Displacement: ESP responses to targets preceding the intended targets. Displacement to the targets one, two, three, etc. places preceding the intended target are designated as (—1), (—2), (—3), etc.

Forward Displacement: ESP responses to targets coming later than the intended targets. Displacement to the targets one, two, three, etc. places after the intended target are designated as (+1), (+2), (+3), etc.

DT (Down Through): The clairvoyance technique in which the cards are called down through the pack before any are removed or checked.

ESP (Extrasensory Perception): Awareness of or response to an external event or influence not apprehended by sensory means.

ESP CARDS: Cards, each bearing one of the following five symbols: star, circle, square, cross and waves (three parallel wavy lines).

ESP PACK: Twenty-five ESP cards.

Closed Pack: An ESP pack composed of five each of the five symbols.

Open Pack: An ESP pack made up of the ESP symbols selected in random order.

EXPECTATION: See *Chance.*

EXTRACHANCE: Not due to chance alone.

FREE MATERIAL: The stimulus objects of experiments in which an unlimited or unspecified range of stimulus objects is employed (as contrasted with methods such as card-calling in which the subject knows that the stimulus object is one of a known range).

GESP (General Extrasensory Perception): A technique designed to test the occurrence of extrasensory perception, permitting either telepathy or clairvoyance or both to operate.

MCE (Mean Chance Expectation): see *Chance.*

P (Probability): A mathematical estimate of the expected relative frequency of a given event if chance alone were operative.

PARAPSYCHOLOGY: A division of psychology dealing with behavioral or personal effects that are demonstrably nonphysical (that is, which do not fall within the scope of known physical principles).

PERCIPIENT = SUBJECT: The person who makes the calls in an ESP test.

PK (Psychokinesis): The direct influence exerted on a physical system by a subject without any known intermediate physical energy or instrumentation.

PLACEMENT TEST: A PK technique in which the aim of the subject is to try to influence falling objects to come to rest in a designated part of the throwing surface.

PRECOGNITION: Cognition of a future event which could not be known through rational inference.

PREFERENTIAL MATCHING: A method of scoring responses to free material. A judge ranks the stimulus objects (usually pictures in sets of four) with respect to their similarity to, or association with, each response; and/or he ranks the responses with respect to their similarity to, or association with, each stimulus object.

PSI: A general term to identify personal factors or processes which are nonphysical in nature. It approximates the popular use of the word "psychic" and the technical one, "parapsychical."

PSI-MISSING: Exercise of psi ability in a way that avoids the target the subject is attempting to hit.

PSI PHENOMENA: Occurrences which result from the operation of psi. They include the phenomena of both ESP (including precognition) and PK.

PSYCHICAL RESEARCH: Older term used for parapsychology.

QD (Quarter Distribution): The distribution of hits in the record page (or in a logical subdivision thereof, such as the set or the half-set) as found in the four equal quarters formed by dividing the selected unit horizontally and vertically.

RANDOM ORDER: An order of events which displays no trends or regularities that would allow any inference regarding one event from one or more of the others in the series.

RUN: A group of trials, usually the successive calling of a deck of 25 ESP cards or symbols. In PK tests, 24 single die throws regardless of the number of dice thrown at the same time.

SCORE: The number of hits made in any given unit of trials.
Total Score: Total of scores made in a given number of runs.
Average Score: Total score divided by number of runs.

SD (Standard Deviation): Usually the theoretical root mean square of the deviations. It is obtained from the formula $\sqrt{npq}$ in which n is the number of single trials, p the probability of success per trial, and q the probability of failure.

SERIES: Several runs or experimental sessions that are grouped in accordance with a stated principle.

SESSION: A unit of an ESP or PK experiment comprising all the trials of one test occasion.

SET: A subdivision of the record page serving as a scoring unit for a consecutive group of trials, usually for the same target.

SIGNIFICANCE: A numerical result is significant when it equals or surpasses some criterion of degree of chance improbability. The criterion commonly used in parapsychology today is a probability value of .01 or less, or a deviation in either direction such that the CR is 2.58 or greater.

SINGLES TEST: A PK technique in which the aim of the subject is to try to influence dice to fall with a specified face up.

SPONTANEOUS PSI EXPERIENCE: Natural, unplanned occurrence of an event or experience that seems to involve parapsychical ability.

STIMULUS OBJECT: The ESP card or drawing or other object, some identifying characteristic of which is to be apprehended by the percipient.

STM (Screened Touch Matching): An ESP card test in which the subject indicates in each trial (by pointing to one of five key positions) what he thinks the top card is in the inverted pack held by the experimenter behind a screen. The card is then laid opposite that position.

SUBJECT: The person who is experimented upon. In ESP tests, most commonly the percipient (though also the agent in GESP and telepathy). In PK tests, any individual whose task it is to influence the objects thrown.

TARGET: In ESP (including precognition) the objective or mental events the subject is attempting to respond to. In PK tests, the faces of the die which the subject attempts to bring up in the act of throwing. In placement tests, the designated part of the throwing surface.

Target Card: The card which the percipient is attempting to identify or otherwise indicate a knowledge of.

Target Pack: The pack of cards the order of which the subject is attempting to identify.

Target Face: The face on the die which the subject tries to turn up by PK.

TELEPATHY: Extrasensory perception of the mental activities of another person (as distinguished from clairvoyant cognition of objective events).

TRIAL: In ESP tests, a single attempt to identify a stimulus object. In PK tests, a single throw of the dice or other objects thrown.